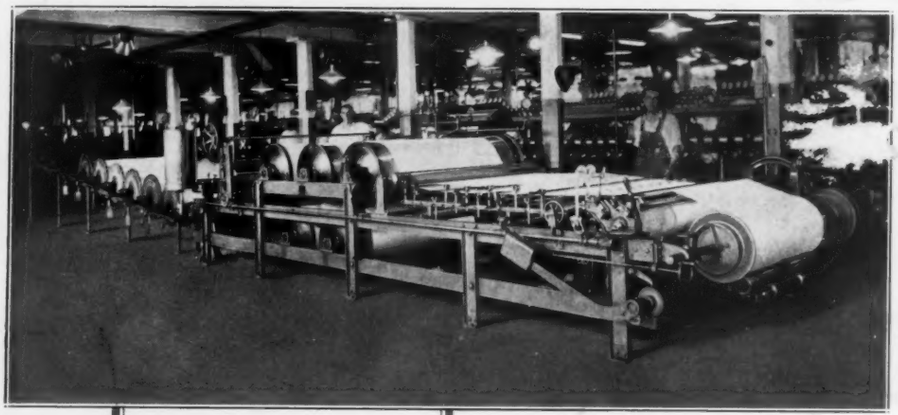
MODERNIZATION AND MAINTENANCE NUMBER

FEBRUARY, 1934

COTTON

Serving the

TEXTILE INDUSTRIES



FEB 23 1934

Installation of a Johnson Cotton System Sizer in a large Southern mill.

What Users Say—

"We find after using your machine we have increased loom production over 100% and have almost entirely eliminated second quality fabrics."
—Silk Manufacturer.

"We find the Johnson Improved Warp Sizer the best machine of its kind on the market."
—Large Cotton Mill.

"We have found that in the nine years of running there were no costs for repairs through faulty parts."
—Commission Sizer.

"In our opinion, the main point of these Sizers is the high quality of the warps."
—Leading Silk Manufacturer.

"We can size any type and denier of yarn, including Acetate or Celanese on the 'Johnson.' Furthermore, we use the quetsch for finishing certain fabrics."
—Rayon Fabric Manufacturer.

We are experts in the manufacture of rayon sizing machinery . . . more than 6 times as much rayon is sized on "Johnsons" as on all other rayon sizers in the world combined.

Users tell of

BETTER, FASTER LOOM PRODUCTION

. . . when they size on "JOHNSONS"

Hundreds of leading mills all over the world secure better warps, greater loom production, finer fabrics, and fewer "seconds" by using Johnson Sizers.

For many years we have specialized in the manufacture of this type of equipment. The Johnson Rayon Warp Sizer is not an experiment, but is the result of years of experience of our engineers in close co-operation with leading manufacturers of synthetic yarns and fabrics. We have focused ALL our efforts on the production of this one type of machine EXCLUSIVELY. As a result, the Johnson Rayon Warp Sizer is without an equal and contains absolutely every feature needed for successful sizing of any type yarn.

One of the advantages of this sizer is its simplicity of construction. The "Johnson" has no unnecessary, elaborate and expensive equipment which increases the initial cost and ultimate upkeep, and complicates the operation of the machine.

CHARLES B. JOHNSON

PIERCY & HOLSMAN STS., PATERSON, N. J.

Representatives

Carolina Specialty Co.
Charlotte, N. C.

Joseph Barnes
New Bedford, Mass.

Universal Winding Co.
Manchester, England

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KEEP OUT OF TROUBLE WITH F. P. YARNS

Some yarns are used just to GET out of trouble

Franklin Process cotton yarns are good for that purpose, too, but they are even better as a means of *avoiding* trouble altogether. These yarns, always dependable, are made by reputable spinners who pride themselves on standardization of quality in manufacturing methods and in raw materials. It is a simple matter to duplicate results that you obtain with Franklin Process yarns. • Franklin Process offerings include all popular counts and qualities — natural, bleached or dyed — in almost any standard put-up. Many numbers are carried in stock in Providence and Philadelphia. • If you are not sure as to the most suitable yarn for your requirements, we shall be glad to make recommendations on the strength of our past experience with a great variety of yarn users. Samples and prices on request.

FRANKLIN PROCESS COMPANY

Yarn Merchants and Yarn Dyers. Also M'f'rs of Glazed Yarns and Machines for Dyeing and Bleaching Yarns in the Package Form, Cotton and Wool Raw Stock, Worsted Tops and Worsted Yarn on Jackspools, also Machines for Soaking Silk. Main Office and Plant at Providence, R. I. Branch Plants at Philadelphia, Greenville, S. C., and Chattanooga, Tenn. New York Office, 40 Worth St.

FRANKLIN PROCESS

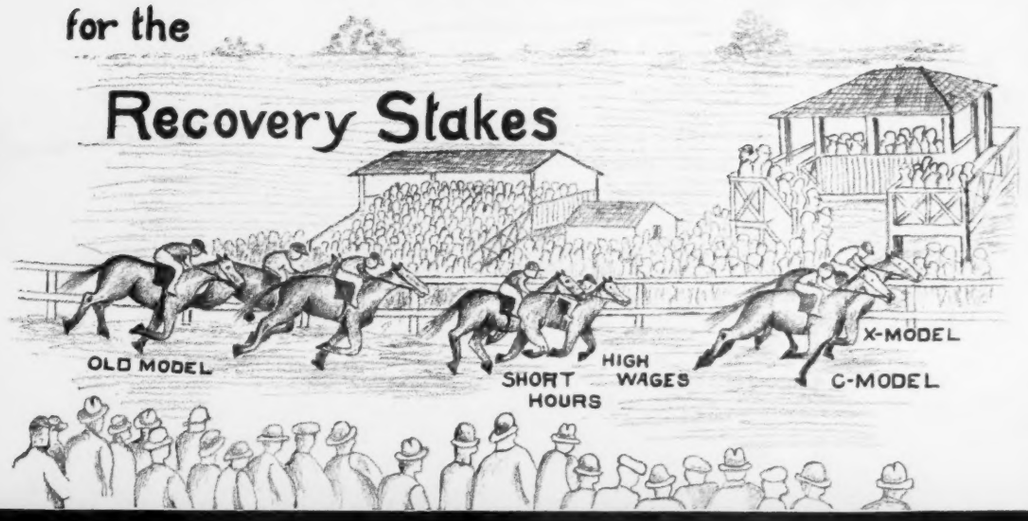
COTTON YARNS AND CUSTOM YARN DYEING

COTTON is published monthly by W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga. Subscription Rates, United States and Possessions, $1.00 for one year; $2.00 for three years; Canada, $1.50 per year; Foreign Countries, $2.00 per year. Entered as second-class matter at the postoffice, Dalton, Ga., under the Act of March 3, 1879.

The Prosperity Derby

for the

Recovery Stakes



Are You Playing the 100 to 1 Shot?

The favorite colts for the Prosperity Sweepstakes are "X Model" and "C Model" from the stables of Modern Machinery

Their records show that when properly driven they can beat the strong-limbed ponies "High Wages" and "Short Hours"—but the ponies will fight it out to a good finish

The owners of "Old Time Model" think they can see one more race in their nag's shaky legs

The Wise Bookmakers—sizing up the favorites and recognizing the ability of "High Wages" and "Short Hours" to make it a hot race—have made "Old Time Model" a 100 to 1 shot

Which Horse Carries Your Money?

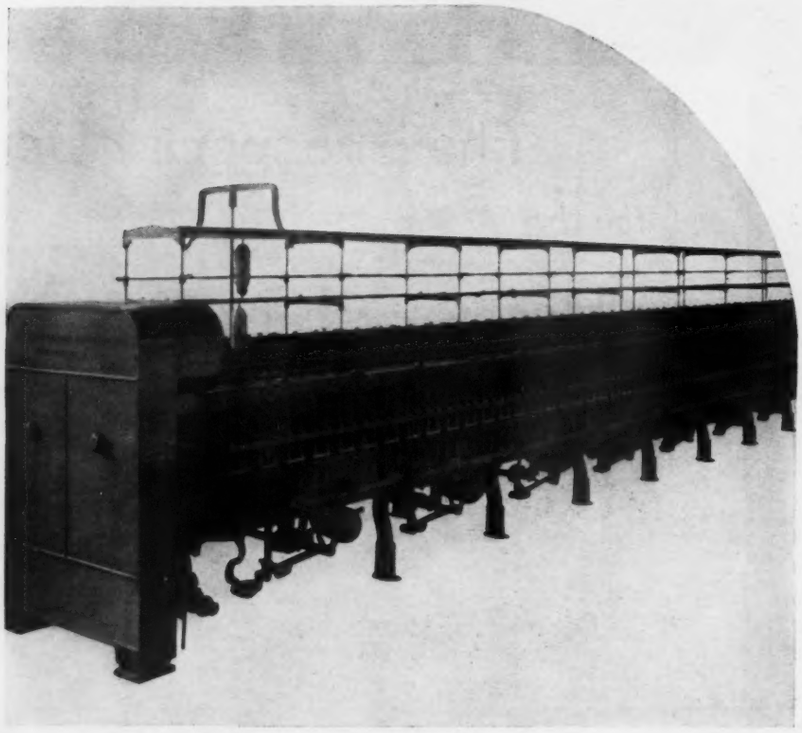
Under present track conditions at Recovery Park it is dangerous to stake the Income of Your Mill on the Wrong Horse

DRAPER CORPORATION

Hopedale Massachusetts

Southern Offices Atlanta Ga and Spartanburg S C

SKF EQUIPPED
BUILT BY
H&B AMERICAN
MACHINE
COMPANY

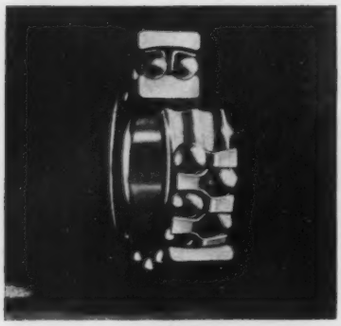


SKF BEARINGS AND SPINDLES FOR BETTER ▼ ▼ ▼ PRODUCTION

"Every feature of modern spinning has been incorporated in this design," says H & B of their new model B & C Spinning Frames . . . and that of course includes the SKF Ball Bearings on the cylinder and SKF Roller Bearing Spindles they are ready to furnish when ordered. Where better yarn and increased production are demanded to meet present day demands for quality at a fair profit . . . SKF Performance is preferred.

SKF Ball Bearings on spinning frame cylinders assure smooth running with less power and no danger of destructive vibration. And the reason is that SKF's show no wear and never require adjustments. More than 100,000 SKF Spindles were sold last year to progressive mills because they make good yarn and insure the utmost cleanliness. Specify SKF's when you buy new equipment . . . it's a good investment.

●You may buy a bearing as a bargain but try and get a bargain out of using it, for nothing is apt to cost so much as a bearing that cost so little



3145

SKF INDUSTRIES, INC., FRONT ST. & ERIE AVE., PHILADELPHIA, PA.

SKF
Ball and Roller Bearings

BUTTERWORTH *agrees with you . . .*

Business Week!

THIS part of the weekly editorial in the December 9th issue of Business Week so aptly applies to the Textile Finishing Industry that we feel it unnecessary to add any thoughts of our own — so completely does it express them.

"— since *price*-cutting is barred, *cost*-cutting is the best weapon left with which to fight the battle for survival. The high-cost plant is doomed, under the codes. Its only hope is to modernize. Codes do not wipe out competition; they intensify it. Establishments which have lived all these years by dark and devious practices suddenly must meet efficiency on its own battleground.

It must always be remembered, too, that the manufacturer's most dangerous competitors are not his rivals in his own line. The deadliest competition is between industries. Here, cost is vital.

The progressive manufacturer can install new equipment with greater assurance when his code protects him. In the past, he hesitated to make heavy investment in better machines when his competitor could wipe out the cost advantage by posting overnight notice of a wage cut."

Our engineers are at your service to discuss with you plans for installing modern, labor-saving machinery in place of machines which are obsolete.

We are members of the National Association Textile Machinery Manufacturers — Code No. 1333-1-08

★

H. W. BUTTERWORTH & SONS CO. *Established 1820*
PHILADELPHIA, PA.
PLANTS *at* PHILADELPHIA *and* BETHAYRES, PA.

New England Office: TURKS HEAD BUILDING, Providence, R. I.
In Canada: W. J. WESTAWAY CO., Hamilton, Ontario
Southern Office: JOHNSTON BUILDING, Charlotte, N. C.

BUTTERWORTH *Finishing* MACHINERY

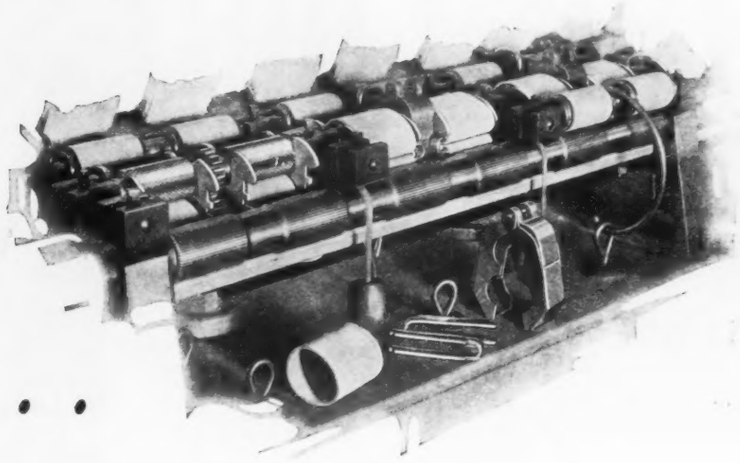
A COMPLETE LINE OF FINISHING MACHINERY FOR THE RAYON AND TEXTILE INDUSTRY

CELANTHRENES
ANTHRAQUINONES
PONSOLS
SULFANTHRENES
LEUCOSOLS
SERISTANS
SULFOGENES
PONTAMINES
PONTAMINE DIAZOS
PONTAGENS
NAPHTHANILS
PONTACYLS
PONTACHROMES
BASIC COLORS
GALLOPONTS

DU PONT HAS A TEXTILE DYE FOR *EVERY* USE—And a Technical Service Department that is always available to help with your dyestuffs problems.

E. I. DU PONT DE NEMOURS & CO., INC.
Organic Chemicals Department,
Dyestuffs Division
WILMINGTON · DELAWARE

Speaking of Pioneering . . .



• Did you know that Whitin has quietly and successfully perfected the only practical system of long drafting on Roving Machinery?

• Whatever the method used on Spinning Frames, only Whitin-Casablancas can give you equal opportunity to save in the card room.

• Did you know that large mills, including Canadian Cottons, Limited . . . Dwight Manufacturing Company . . . Utica & Mohawk Cotton Mills, Inc. . . . *are completely equipped* with Whitin-Casablancas on Roving Frames, while fifty other mills are partially equipped?

• There is no other DEVELOPED system of high drafting for roving.

• You can take advantage of it *now* . . . do not await the outcome of future experimental installations . . . your com petitors are saving money TODAY!

• Take time to profit!

WHITIN MACHINE WORKS **WHITIN** WHITINSVILLE, MASS.

THIS LIGHT-STEALING

Exclusive "Rice Process" prevents premature white paint "yellowing"... Insures lastingly white, continuously high light-reflecting ceilings and walls

THE VIAL ABOVE contains refined linseed oil commonly used in white oil paints. The yellow color of this linseed oil disappears when the oil is properly mixed with white pigments. The white paint it makes *looks* white. But don't be fooled. The "yellow" is still there. Sooner or later it will appear upon your painted ceilings and walls.

THIS IS HOW the same highly refined linseed oil, as contained in the first tube, appears after it has been treated by the "Rice Process." It is almost pure white. This "Rice Processed" linseed oil is the principal reason why Barreled Sunlight remains white, year after year. This process, furthermore, gives Barreled Sunlight its great paint-saving hiding power, its remarkable time- and labor-saving ease of flow.

A plant painted with Barreled Sunlight spends little money on maintenance. This amazingly smooth, non-porous white paint resists dirt... is as easy to wash as tile. Soap and water carry on the job of maintenance. And there's no need to repaint to overcome dingy yellowed ceilings and walls. Barreled Sunlight remains cleaner, whiter, year after year.

YELLOW BANISHED AT ITS SOURCE

How really white can a white paint be when its base is yellow linseed oil? How long will it even look white when this yellow color creeps out of the paint . . . spreads over your ceilings and walls?

There's no getting around this fact —*paints made with ordinary linseed oil . . . yellow oil . . . will not, cannot remain white for any great length of time.*

Soon these ordinary white paints become dull, dingy, *yellowed.* Reflected light diminishes, plant efficiency suffers, production costs go up.

We Take Out the Yellow

No ordinary linseed oil ever gets into a can of Interior Barreled Sunlight. The noted "Rice Process" takes care of that! Refined linseed oil, treated by this exclusive process, loses its yellow coloring . . . becomes almost pure white.

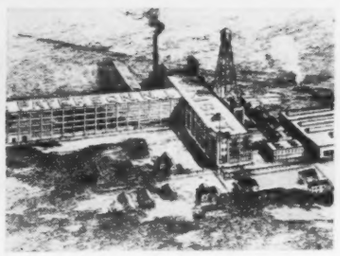
Remains White Longest

Naturally, the white paint made with "Rice Processed" linseed oil stands little chance of becoming yellow upon your plant ceilings and walls. There's no yellow in the paint to come out! In fact, we maintain that Interior Barreled Sunlight will remain white longer than any other oil-gloss paint or enamel! (See statement below.)

Today you simply cannot afford to risk your money on white paints that turn yellow . . . that sooner or later begin absorbing valuable light as a sponge does water. Neither can you afford the frequent repainting that is the *only* remedy for yellowed white paint.

For further information, write for the booklet, "More Light and Lasting Cleanliness." U.S. Gutta Percha Paint Company, 8B Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

THE ALLEN-A COMPANY, Kenosha, Wisconsin, manufacturers of hosiery and Allen-A underwear, say: "Many years' use of Barreled Sunlight in our knitting mills...We like the way it spreads, covers and the way it continues to stay white."



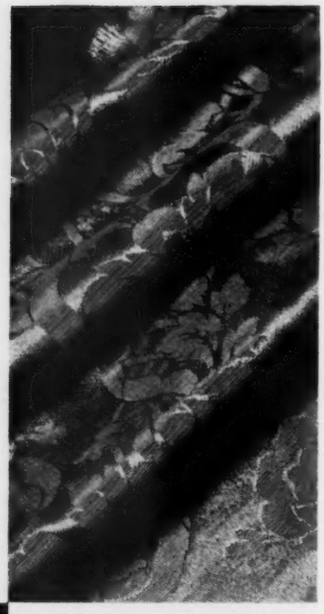
WRIGHT AERONAUTICAL CORP., Paterson, N. J., manufacturers of aviation engines, with 680,000 square feet of their plant painted with Barreled Sunlight say, "... perfect white color . . . covering qualities . . . maximum light reflection . . . these advantages represent an ultimate economy . . ."

YOUR SURETY . . .

We maintain that Interior Barreled Sunlight, the "Rice Process" White, will remain white longer than any oil-gloss paint or enamel, domestic or foreign, applied under the same normal service conditions and according to our specifications. If it does not do so, we will give, free, enough Barreled Sunlight to repaint the job.

Remains White . . Reflects Light LONGEST

TEXACO HELPS LOWER PRODUCTION COSTS



Many a plant owner has found the way to substantial savings in lubrication. It is not by economizing in the price per gallon or per pound. That is quite unimportant when you consider the power savings and the reduction in wear and maintenance expense that may be accomplished through *effective* lubrication.

Texaco engineers have worked in many of the foremost textile mills in the country—assisted in developing new and better lubricants and more effective methods of application.

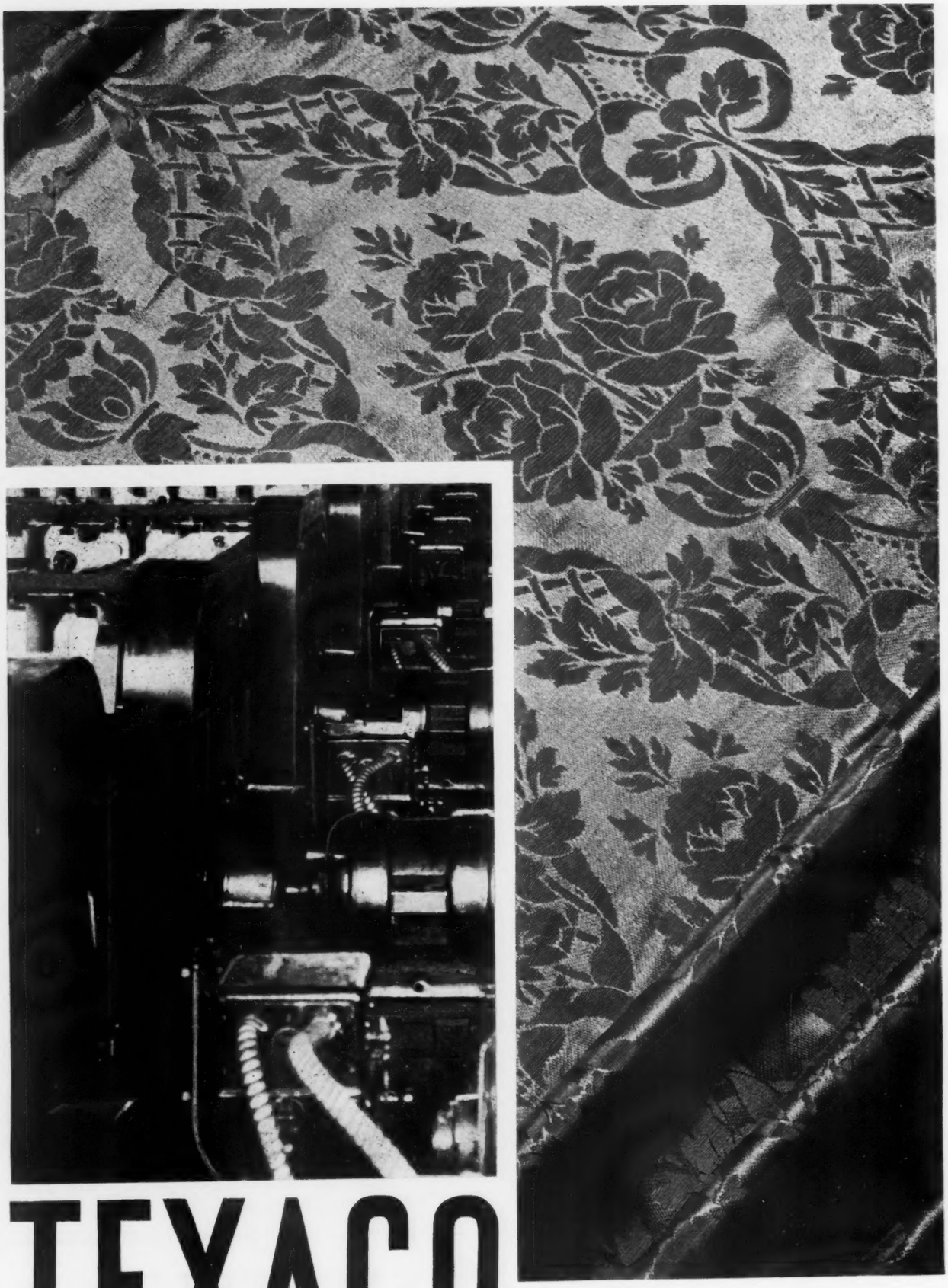
The Texas Company is exceptionally well organized in this service to the industry. Its unsurpassed research facilities are available to mill engineers and operators in solving any problem in lubrication. Its field engineers are trained men who will give you every cooperation. See what this service means to you. There is a Texaco Lubricant for every purpose. Write The Texas Company.

THE TEXAS COMPANY, 135 East 42nd Street, New York City

TEXACO LUBRICANTS FOR THE TEXTILE INDUSTRY

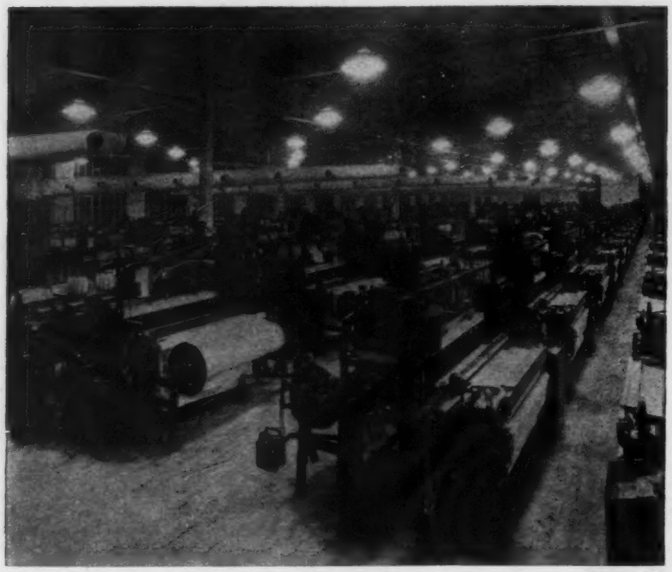
TEXACO SPINDLE OIL ★ TEXACO NABOB OIL ★ TEXACO SPICA OIL ★ TEXACO ALEPH OIL ★ TEXACO TEXOL ★ TEXACO MARFAK GREASE ★ TEXACO THUBAN COMPOUND ★ TEXACO STAR GREASE

TEXACO T REG. T. M.

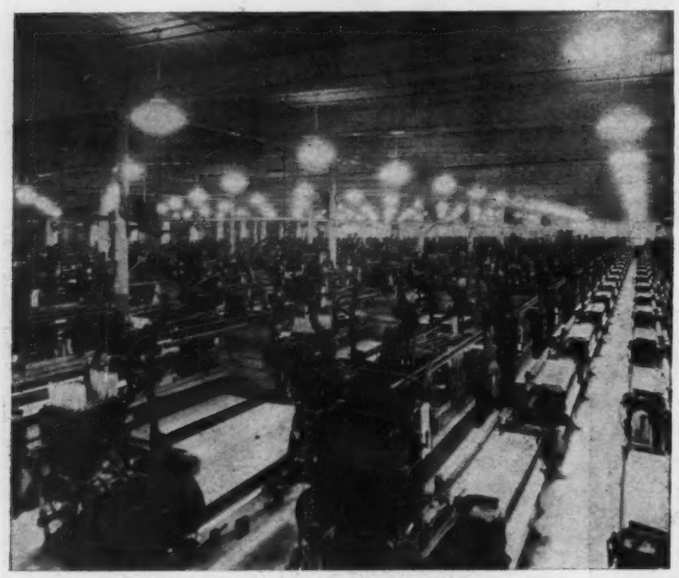


TEXACO LUBRICANTS

MODERNIZED LIGHTING REDUCES DEFECTIVE CLOTH TO A MINIMUM



OLD MILL RELIGHTED—*Uses 300-watt Glassteel units on 10' x 12' 6" centers, or 2.4 watts per square foot. Intensity 12 to 15 foot candles. System wired for 500-watt lamps for future increases in lighting intensity.*



NEW MILL LIGHTING—*Uses 300-watt Glassteel units in staggered system arrangement. Uses 2.15 watts per square foot. Staggered system used to avoid air conditioning pipes. Intensity is 10 to 12 foot candles. Mill wired for 500-watt lamps for future increases in lighting intensity.*

THE Cleveland Cloth Mills of Shelby, N. C. are convinced that modernized lighting more than pays its way in maintaining quality and reducing losses due to defects.

This has been brought home to them in the past few months. Recently they erected a new weave room. Lighting of the most modern type was installed. The Cleveland Cloth Company found so many improvements had been made in lighting that they decided to have the lighting of their original weave room brought up to date. The Cleveland Cloth Company is gratified with the results. They say:

> *"We manufacture the better quality ladies' dress goods, using principally Acetate warps with Rayon silk filling. In this type of goods the quality of the cloth is of vital importance. Your lighting system enables us, first,* ***properly to adjust the mechanism of the loom*** *in the most minute details, and thereby enables us to* ***avoid making much defective cloth.*** *In the second place, it enables us to see readily a defect that is being made in the cloth while it is still on the loom, and gives us an opportunity to remedy the cause and reduce to the minimum the amount of defective goods produced."*

Lighting plays an important part in every modernization program to increase quality production and lower manufacturing costs. It cuts down spoilage and waste, and increases the output of men and machines.

The services of the engineers who planned the lighting for the Cleveland Cloth Mills are available to you without charge. They will check your lighting, and let you "see for yourself" that your lighting can be made to return bigger profits. General Electric Company, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC
MAZDA LAMPS

Condor TRADE MARK Compensated

PAT. APPLIED FOR

Running in dust and grit is just an everyday job for this 14-inch 7-ply Condor Compensated Belt

Practically all belts sold today will give service on standard drives, but it's the adverse conditions under which Condor Compensated Belts are now and then called on to operate that bring out their sterling qualities.

Condor LINE

V-Belt	Fire Hose
Flat Belt	Steam Hose
Cone Belt	Mill Sundries
Air Hose	Suction Hose
Acid Hose	Oilless Bearings
Water Hose	Rubber Lined Tanks

Rubber Covered Rolls

Industrial Brake Blocks and Lining

Condor Compensated Belts have eleven advantages not found in standard rubber belts. Most important of all is its advanced design which allows low tension operation, and still retains an overload capacity of 100%. It is the only rubber belt that responds to belt dressing.

The most difficult drives can be safely belted with Condor Compensated Belt.

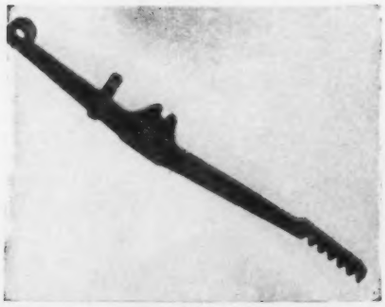
Sold by leading Jobbers

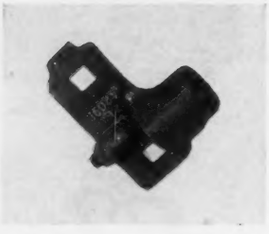
NRA

THE MANHATTAN RUBBER MFG. DIVISION

OF RAYBESTOS-MANHATTAN, INC.

EXECUTIVE OFFICES AND FACTORIES, PASSAIC, NEW JERSEY





You Can't Buy Better Textile Repair Parts!

The long, trouble-free service that Henderson Textile Repair Parts are giving every user is stronger evidence than anything we could say regarding their superiority. The reasons for their superiority are higher quality materials, skilled workmanship and precision patterns that make Henderson parts fit perfectly.

HENDERSON

Investigate your stocks of repair parts now—don't be forced to shut-down a machine waiting on a new part. There are precision patterns or parts for practically all looms, pickers and other textile machinery ready for quick shipment to you, and our low overhead and close location enable us to make worthwhile savings and render quicker service. Quotations gladly sent on any textile part required.

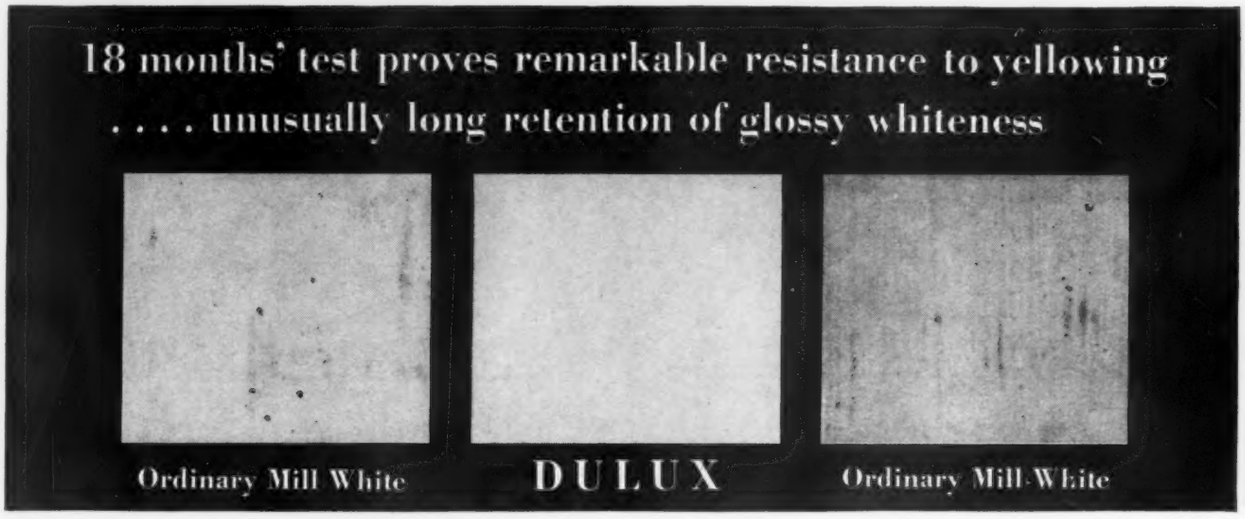
HENDERSON
FOUNDRY & MACHINE WORKS
HAMPTON GEORGIA

DU PONT ANNOUNCES A WHITER MILL WHITE

It's DULUX

(REG. U. S. PAT. OFF.)

The Mill White that STAYS *Whiter*


18 months' test proves remarkable resistance to yellowing
. . . . unusually long retention of glossy whiteness
Ordinary Mill White
DULUX
Ordinary Mill White

These 3 mill whites were stored in a dark factory room for 18 months. Note darkening (due to yellowing) of the two ordinary mill whites. See how DULUX (the center panel) retains its whiteness — stays cleaner.

HERE is a remarkable new and whiter finish for plant interiors.

DULUX Mill White is its name. Du Pont chemists developed and produced it. They tested it in every way known to science and then said: "This is the whitest mill white you ever saw."

And it is. You can see it yourself with the naked eye.

Their next statements were even more interesting to plant superintendents. They said:

"DULUX Mill White will stay whiter—
"It will resist yellowing—
"It will retain its glossy whiteness longer"—

See proof in the panels above. They show what happened to three different mill whites exposed for 18 months. *The middle panel is DULUX MILL WHITE.*

A new and different vehicle—clear and almost colorless—is responsible for the original whiteness of DULUX Mill White—and its retention of that brilliant whiteness. This revolutionary finish compares favorably in first cost with other high grade mill whites and shows the way to future economies through fewer repaintings. To say nothing of greater employee efficiency under better lighting conditions... faster production... practically no waste and spoilage of goods, and an absence of other evils that come from half-lighted, shadowy areas inside a mill.

Now read the summary of all the advantages you get in every gallon of DULUX Mill White. For more detailed information send for DULUX Mill White booklet. Address E. I. du Pont de Nemours & Co., Inc., (Dept. C-2) Wilmington, Delaware.

DU PONT
REG. U. S. PAT. OFF.

DULUX MILL WHITE HAS THESE ADVANTAGES

DULUX is *Whiter* on original application.
DULUX *Stays* Whiter—Maximum resistance to yellowing.
DULUX Dries *Quicker*—Dust-free in 3 to 5 hours. Ready for re-coating overnight.
DULUX Easier to Apply—Shortens painting time.
DULUX *Hides* Better—Assures hiding and coverage economy.
DULUX Has Higher Gloss—Holds sheen longer.
DULUX is *More* Durable—Resists chipping and cracking.
DULUX Collects Less Dirt—Dries without "after-tack."
DULUX Stands Repeated Washing—Surface is harder, smoother and non-porous.

DULUX MILL WHITE

(REG. U. S. PAT. OFF.)

"THANKS, DR. STEELSTRAP, YOU HAVE SAVED US REAL MONEY ON OUR SHIPPING COSTS"

Here's a shipment of cotton textiles—and a neat job of packaging. The contents are tightly compressed, placed in a fibre case, and reinforced with Acme Steelstrap.

Acme Steelstrap has been used by the textile industry for many years as Acme Bale Tie Band. Preferred by most mills because true temper, smooth edges, and clean rust resisting finish make it the ideal bale reinforcement.

"Don't thank me, mister . . . you deserve the credit for letting me come in here to diagnose the case."

. . . . . .

I can only advise—basing my recommendations on hundreds of cases which I have seen cured of such common shipping ailments as high-cost-itis, excess weight, under-strength, faulty construction, etc.

The shipper himself generally works out the best method for administering for his particular case after he has seen how completely Acme equipment meets every need. With my wide experience, and his specialized knowledge, we never fail to devise a treatment that makes every package "Bound to get there".

My STRAP-BOOK tells in plain words, figures and pictures, what a great many shippers have been able to accomplish with correctly administered Steelstrap. This valuable information is free for the asking.

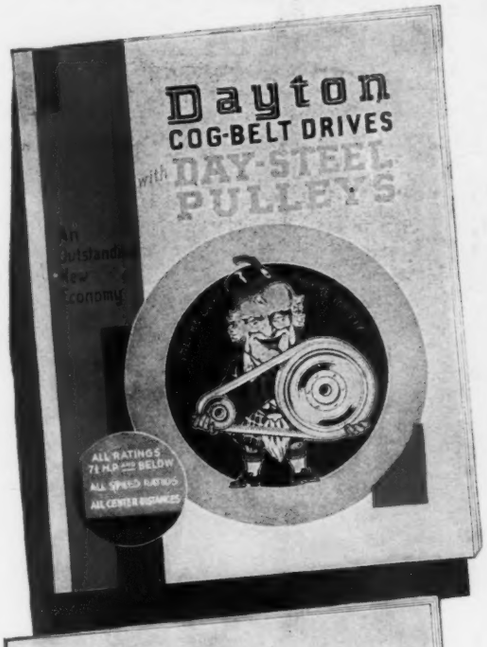
Doc. Steelstrap

Acme Steelstraps

ACME STEEL COMPANY, General Offices: 2847 Archer Ave., Chicago, Ill.

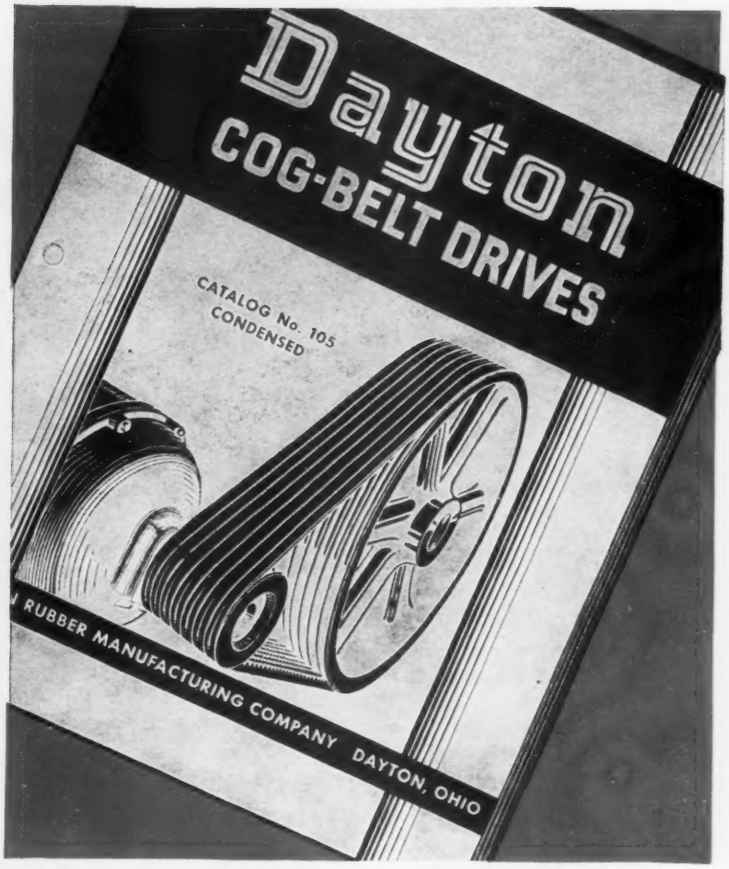
Branches and Sales Offices in Principal Cities

DAY-STEEL PULLEYS AND DRIVES
Today thousands of machines in all kinds of industrial plants are equipped with Dayton Cog-Belt Drives and the new Day-Steel Pulleys. These multiple groove pulleys for ratings up to 7½ horse power represent an amazing saving in cost and a substantial reduction in weight. Complete, simplified engineering information is contained in Catalog No. 110—it's only a minute's job to select the proper drive for any machine or job.



Dayton
Standardized Fractional Horsepower
V-BELT DRIVES
FOR ALL TYPES OF SMALL MACHINERY
Any Speed Ratio
Any Center Distance
NO CALCULATIONS NECESSARY
Color too!
A Complete Service and Saving for Manufacturers and Users of Small Machinery
Only the Dayton V-Belt Can Give You All These Advantages
THE WORLD'S LARGEST MANUFACTURER OF V-BELTS

FRACTIONAL HORSE POWER DRIVES
Hundreds of thousands of Dayton Standardized V-Belt Drives for fractional horse power are now used as standard equipment by manufacturers of small machines of every type. Extensive stocks of these V-Belts and Pulleys are carried in a complete range of sizes for every small power need. Catalog No. 115 contains complete, simplified engineering information.



DAYTON COG-BELT DRIVES—The Dayton Cog-Belt for general industrial service has become famous throughout industry as the "greatest V-Belt ever built," due to superior performance and long life. Complete drives—including pulleys—are carried in stock up to 100 horse power. This means no delay in shipments. The Dayton Catalog No. 105 lists all standard drives up to 1,000 horse power and contains complete, simplified engineering information about Dayton V-Belts and Drives.

There's a Dayton V-Belt Drive for Every Job

These famous belts and drives, made by *the world's largest manufacturer of V-Belts,* are now completely standardized for all power requirements from fractional to 1,000 horse power.

Dayton cog-type V-Belts are utterly different from any other made. Their patented construction gives them outstanding advantages found in no other V-Belt—time and money saving advantages that are now recognized by executives in thousands of industrial plants.

We shall be glad to send you one or all of the catalogs shown on this page and any other information you may desire relative to the use of these drives in your own plant or for standard equipment on any machines you manufacture.

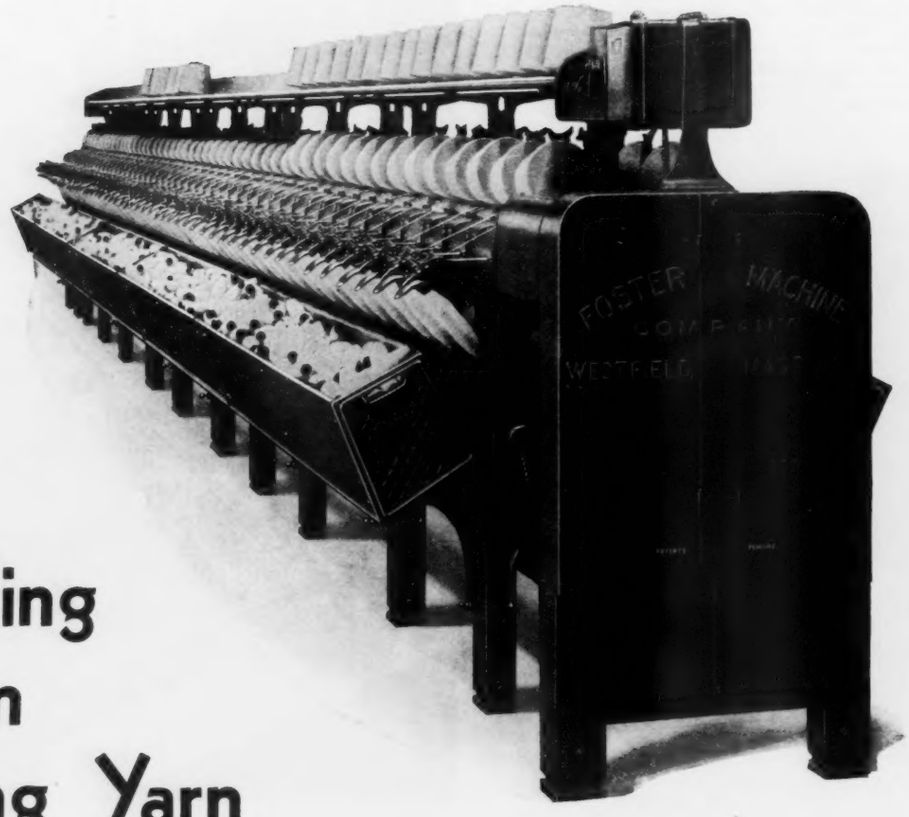
•

THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO

Factory Distributors in Principal Cities and all Westinghouse Electric and Manufacturing Company Sales Offices

Dayton
COG-BELT DRIVES

Also manufacturers of Dayton Fan Belts . . . Dayton Red Tube Radiator Hose . . . and the famous Dayton Thorobred Tires and Tubes



Cone Winding Cotton Knitting Yarn

CONE WINDING the last process in the Spinning Mill making yarn for Knitting, is the Mill's most important process.

The care and skill put into the production of a high grade yarn is rendered nil if the finishing process is not up to date.

The Foster Model 102 Cone Winder is a refinement of former Cone Winding processes, retaining all the time-approved features of the Foster Cone of former Models and adding more delicate manipulation of the yarn while winding, exact lay of coils on the cone surface to reduce variation in tension from the cone on Knitting Machine and additional slub-catching, making the 102 Foster Cone more than ever before the

"Standard Knitting Package"

Foster Machine Company

WESTFIELD, MASSACHUSETTS.

FRED P. BROOKS, REPRESENTATIVE, P. O. BOX 941, ATLANTA, GA.

and now *The* IDEAL THREAD PACKAGE

MADE POSSIBLE BY

Another exclusive development

THE SONOCO Thread Spool or Single Head Spool is our latest important achievement; another example of the progressive service we have been rendering the Textile Industry for the past thirty-five years.

Its advantages are apparent at a glance. Here is a spool with one tapered head, or flange, that rests flat when package is delivering to the sewing machine in an upright position. The thread comes off easily, smoothly, uniformly, without any **chance** of it hanging under the winding.

Attachment for tube winders can be obtained to wind this special package.

There are obviously many other uses for this item, which can be furnished in any length or diameter specified.

NRA WE DO OUR PART

SONOCO PRODUCTS COMPANY

HARTSVILLE, • SOUTH CAROLINA

Branch Plants:
Rockingham, N. C.
Garwood, N. J.
Brantford, Ont.

Main Plant and
General Offices:
Hartsville, S. C.

Eastern Sales Office:
North Avenue,
Garwood, N. J.

SHELL OUT?

Not TUFFER Card Clothing

Tuffer wire is selected of the finest Swedish steel rods and is so set in patented Tuffer foundation that it won't shell out. Once you have chosen the exact Tuffer Card Clothing required for your particular type of carding, and your carder has installed it, you get continuously uniform results.

Howard Bros. manufactures its own foundations. Every inch of it must be perfect before the wire is set—even in thickness, uniformly flexible and true on the edges. With the finest foundation that can be manufactured, the precision and temper of Tuffer wire guarantees efficient, constant operation. This combination meets every standard of quality you want in your card clothing.

Shelling out doesn't worry a user of Tuffer Card Clothing. Tuffer wire stays firmly, yet flexibly in place in Tuffer foundation.

TRADE MARK TUFFER REG. U.S. PAT. OFF.

Howard Bros. Mfg. Company
Home Office and Factory: Worcester, Mass.

Southern Plant
244 Forsyth Street,
Atlanta, Ga.

Branch Offices
Philadelphia, Pa., Dallas,
Texas, and Washington, D. C.

UNIVERSAL STANDARD RING TRAVELERS

PROVIDE A COMPLETE RING TRAVELER SERVICE

BECAUSE it must be a precision operation to secure the demanded quality and uniformity. . . . The U. S. RING TRAVELER COMPANY is fully equipped with the most modern machinery to meet the particular traveler requirements for the Spinning and Twisting of all yarns, also for the throwing of Silk and Rayon fibres.

THE PATENTED NEBOW VERTICAL TRAVELER is particularly recommended for lubricating rings.

THE PATENTED BEVEL EDGE TRAVELER FOR Silk and Rayon, Cotton or Wool Fibres.

THE BOWEN SPECIAL TEMPER ROUND AND SQUARE POINT TRAVELERS, in flat, oval and round wire. In sizes and weights to meet every requirement. Write for Samples and learn of the advantages found only in using the UNIVERSAL STANDARD RING TRAVELERS.

Manufactured exclusively by

U. S. RING TRAVELER COMPANY

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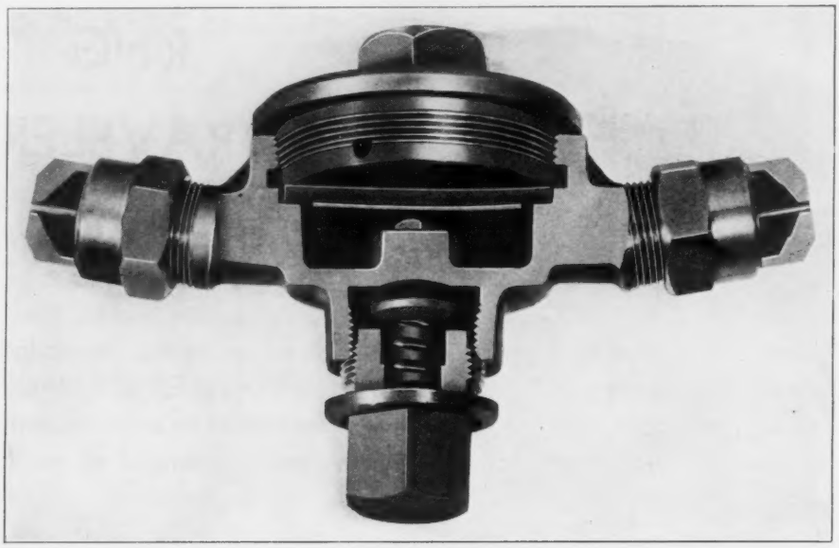
''A TRAVELER FOR EVERY FIBRE''

THE RIHCO HUMIDIFIER HEAD EMPLOYS AN ENTIRELY NEW PRINCIPLE

Air and water are mixed OUTSIDE OF THE HEAD, with the WATER UNDER PRESSURE as well as the air. This assures a correct proportion of air and water, and utilizes every ounce of air pressure and every cubic inch of air for atomizing water. There is no waste energy.



THIS PICTURE OF A CROSS SECTION OF THE RIHCO HEAD SHOWS HOW IT OPERATES

Water is always in the small chamber in the bottom of the head, but can only enter the main water compartment above when the check valve is open. This valve is kept closed by a spring when the Head is not in operation.

The main water compartment is covered by a rubber diaphragm, above which is the air compartment. When air is turned into the air compartment, it depresses the diaphragm, and opens the check valve. As long as the air pressure is on the Head, and is greater than the water pressure, the check valve is open. When the air is turned off, or when its pressure falls below that of the water, the check valve closes instantly, and automatically.

The RIHCO Head always expels the correct proportion of air and water at the proper pressures.

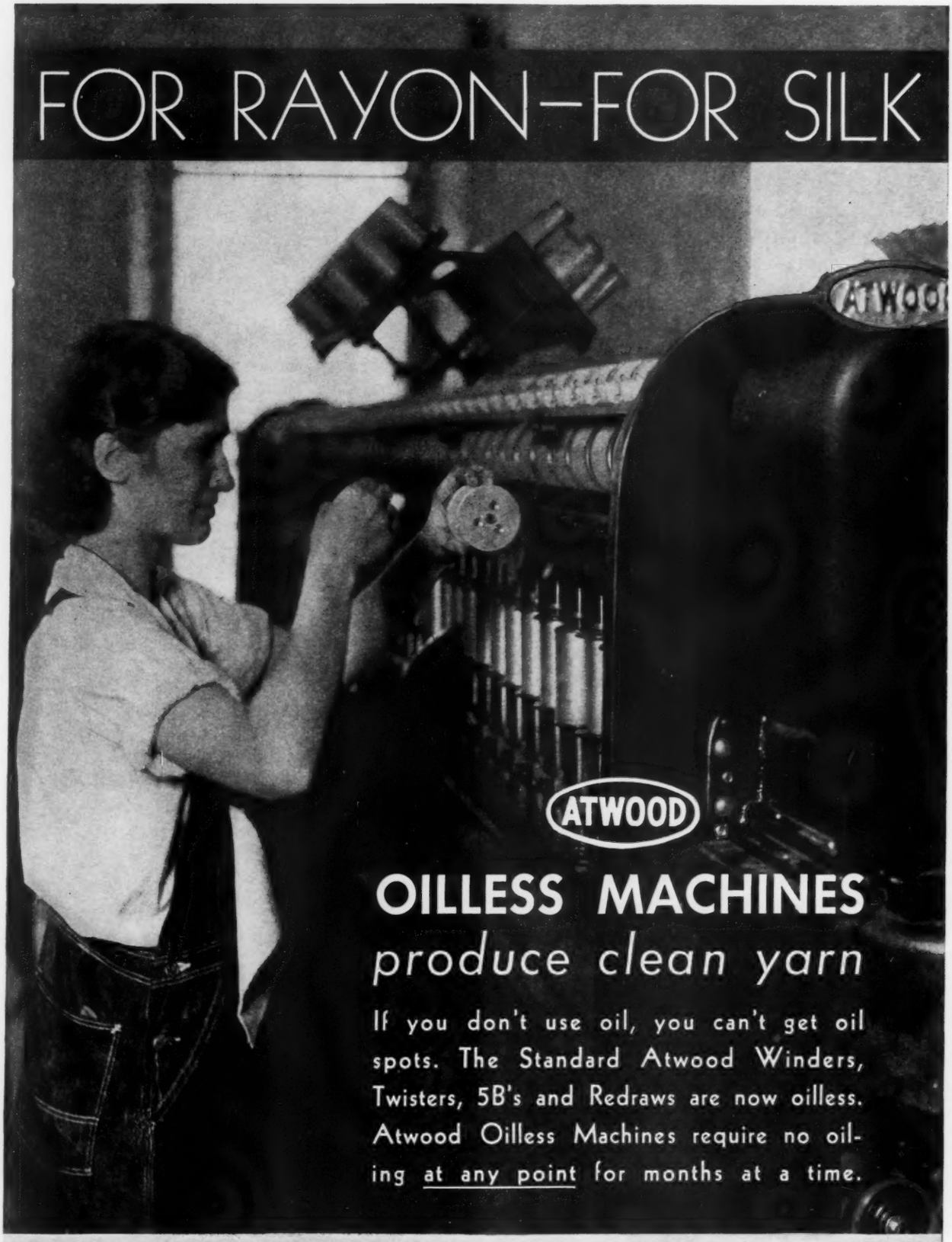
The most efficient atomizer is the one which gets the most possible evaporation from the least possible air at the lowest possible pressure. This is just what the RIHCO does. All the air, and all the pressure is used for atomizing; there is no waste.

Exclusive Southern Agents

AldricH MachinE

Greenwood, WorkS South Carolina

FOR RAYON—FOR SILK



ATWOOD

OILLESS MACHINES
produce clean yarn

If you don't use oil, you can't get oil spots. The Standard Atwood Winders, Twisters, 5B's and Redraws are now oilless. Atwood Oilless Machines require no oiling at any point for months at a time.

NRA MEMBER U.S. WE DO OUR PART

THE ATWOOD MACHINE COMPANY, STONINGTON, CONN., U. S. A.

Sales Offices: New York Wilkes Barre, Pa. Stonington, Conn. Charlotte, N. C. Los Angeles, Cal.

ATWOOD MACHINES PRODUCE THE BULK OF AMERICA'S SILK AND RAYON YARNS

388

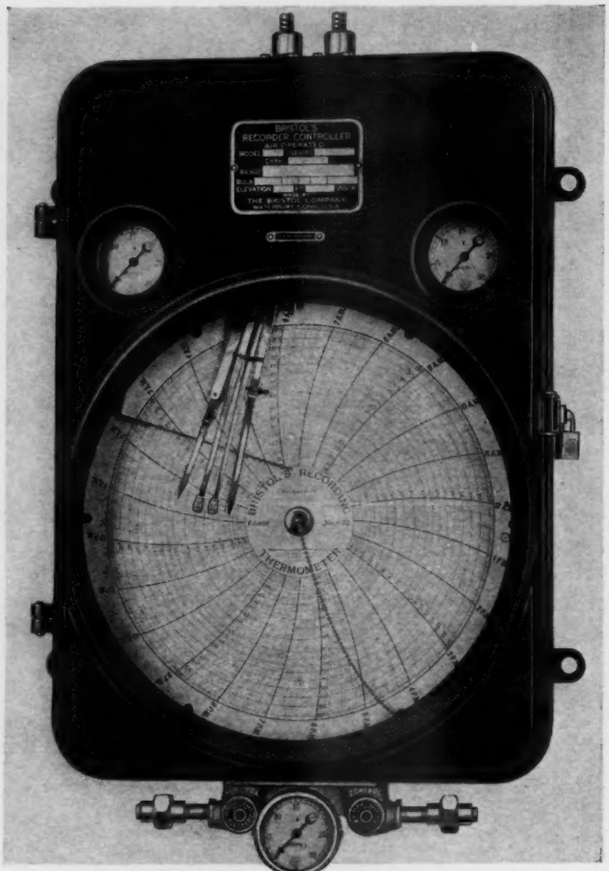
Guessing cooking temperatures *as bad as gambling with size formula*

To do the one is now considered as inexcusable as the other.

Temperatures of cookers, size boxes and slasher cylinders must be known and controlled with a precision such as BRISTOL'S "Free Vane" Control can always be counted on to provide. To take a chance on slasher temperature regulation is to invite the possibility of damaging materials, multiplying seconds, and irreparably injuring production.

The almost uncanny control which BRISTOL'S Full Floating Free Vane Air Operated Temperature Recorder Controller exercises over heat processing is of far-reaching importance to maintenance of strict product uniformity. Here are incredible accuracy and sensitivity provided by a unique and revolutionary principle of operation,— BRISTOL'S ingenious Full Floating Free Vane Control System.

BRISTOL'S Control Specialists will welcome the opportunity to discuss your temperature control problems with you.



Full Floating Free Vane Air Operated Temperature Recorder Controller, Model 5240M.

ASK FOR INFORMATION ON THESE, TOO!

Recording Thermometers
for use in carbonizing, degumming, drying, dyeing, kiers, peroxide bleaching, scouring, slashing. Also on kettles for sizing and de-sizing, starch mangles and back fillers. Also for aging, crabs, hot water heaters, presses, soapers in printwork, weighing tanks.

Industrial Stem Thermometers
for use in carbonizing, cloth washing, mercerizing and starch paste making.

Automatic Pressure Control
for hot water heaters, agers and dry cans.

Recording Pressure Gauges
for agers, compressed air equipment, decatizers, semi-decatizers, dry cans, hot water heaters, kiers.

Recording Liquid Level Gauges
For use in wet processes.

Humidigraph or Direct Reading Relative Humidity Recorder
For use in carding, spinning, weaving and knitting.

Recording Tachometers
For speed control of machines.

Recording Ammeters, Voltmeter, Wattmeters And Frequency Meters.

THE BRISTOL COMPANY ⌙ WATERBURY ⌙ CONNECTICUT

Branch Offices: Akron, Birmingham, Boston, Chicago, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco

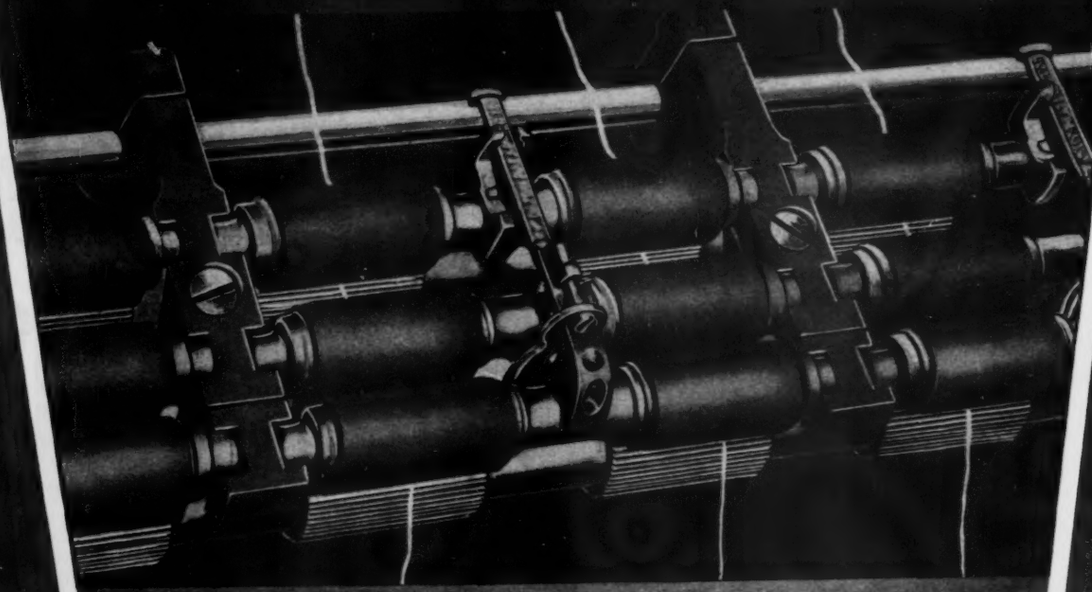
TRADE MARK

BRISTOL'S

REG. U.S. PAT. OFF.

PIONEERS IN PROCESS CONTROL SINCE 1889

After all nothing takes the place of LEATHER



---but it must be "Gilleather"

GILLEATHER, SHEEP or CALF, on your rolls, will do everything you expect a good roll to do. One hundred years of progress have failed to develop anything superior to good leather for top roll covering. If, through using a poor quality leather, you have trouble with your rolls, change at once to GILLEATHER, the only reliable and always dependable top roll covering. Do not be persuaded to try a substitute for leather—you will find it a costly experiment.

SOUTHERN REPRESENTATIVES:

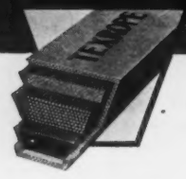
Greenville, S. C. Ralph Gossett
Belton C. Plowden.

SHEEP and CALF SKIN

for TOP ROLLS

GILL LEATHER CO.
SALEM
MASSACHUSETTS
U.S.A.

You pay for RESULTS



The accuracy with which the belts fit the grooved sheave has a decided effect upon the drive. Texrope Belts, made for Allis-Chalmers by B. F. Goodrich, are formed in precisely machined molds. They seat perfectly in the grooves of Texrope Sheaves.

MACHINES are built, not for glory, but for production . . . they must perform better than those of yesterday, and be more economical in first cost as well as in maintenance. Texrope Drives assure maximum results because each installation is carefully designed and carries with it the manufacturer's responsibility for complete satisfaction. Texrope Drives are easy to install and require very little attention, yet they render a valuable service in the transmission of power. May we send you further information on Texrope Drives or offer recommendations? Address nearest district office or Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin.

INSIST ON GENUINE

TEXROPE DRIVES

ORIGINATED AND PATENTED BY ALLIS-CHALMERS MFG. CO.

PROPER LIGHT

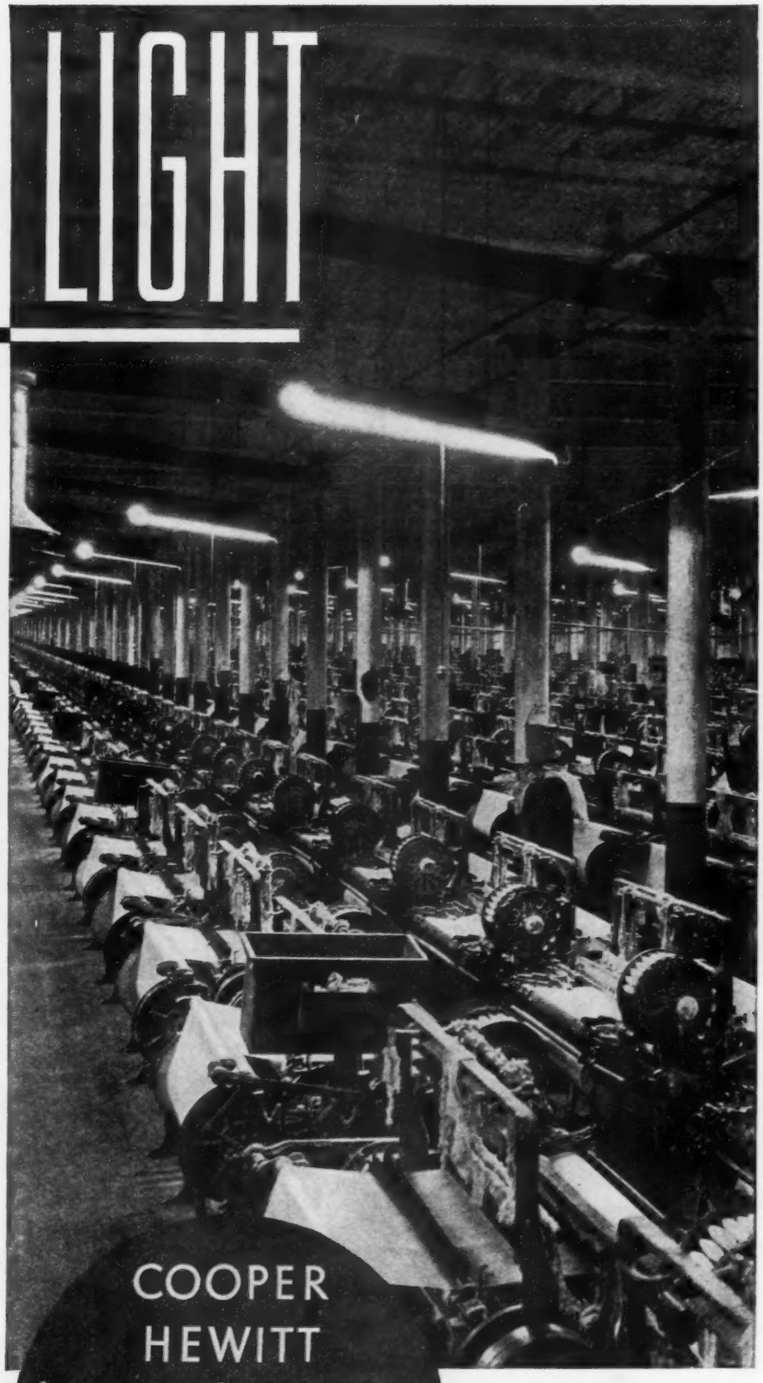
improves weave-shed production

There is scarcely a Cooper Hewitt mercury-vapor lamp now in use that did not have to prove its value in dollar and cents. And where they have been tried, the number of these lamps has grown from an experimental handful to several hundred in a single mill . . . Typical of such a swing to Cooper Hewitts is the following record of the purchases made during a six year period by a large Southern cotton mill.*

REPEAT ORDERS ARE THE BEST PROOF OF SATISFACTION

Year	No. of Orders	No. of Lamps
1927	2	396
1928	1	223
1932	6	86
1933	1	1
		706 lamps

A trial of Cooper Hewitts will be an important step toward lower production costs in your mill. Write today for full information about a thirty day trial (longer if you wish) under your own working conditions. General Electric Vapor Lamp Company, 853 Adams St., Hoboken, N. J. ***Name on request.**



Section of the largest single cotton weave room in the South. Note even distribution of light and clarity of details made possible by Cooper Hewitt mercury-vapor lamps.

GENERAL ELECTRIC VAPOR LAMP COMPANY

NRA MEMBER U.S. WE DO OUR PART

584 Copr. 1934, General Electric Vapor Lamp Co.

Sales Builders for SOUTHERN TEXTILES

New Designs
Reproductions

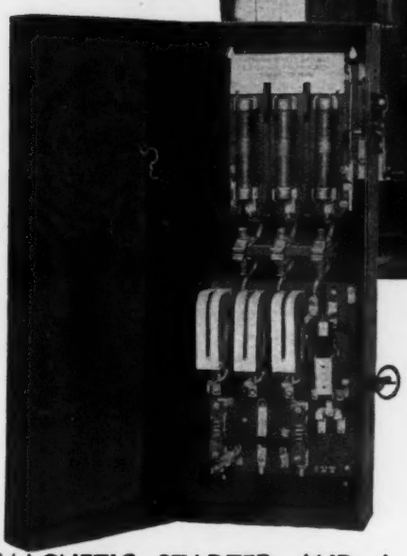
GJA

LABELS • TICKETS
BANDS • HANG TAGS •
BOLT ENDS • RIDERS • •

JACOBS GRAPHIC ARTS COMPANY
CLINTON___SOUTH CAROLINA

To SAVE SPACE
REDUCE INSTALLATION COST
INCREASE SAFETY

use G-E Combination Magnetic Switches



A MAGNETIC STARTER AND A LINE SWITCH ALL UNDER ONE COVER

WHY waste space and increase costs by installing a line switch and a magnetic starter separately? G-E combination magnetic switches now combine these two devices in one compact unit. They're very easy to install — just mount near the motor, bring in the leads through the convenient conduit outlets, and the job is done. The combination is completely wired.

You will appreciate the safety of these switches. With circuit closed the cover cannot be opened. You will appreciate, too, the convenient test jacks which can be provided for quickly checking the motor current at any time. Send coupon for complete information.

GENERAL ELECTRIC

SEND FOR COMPLETE INFORMATION

General Electric Company, Department 6D-201,
Schenectady, N. Y.

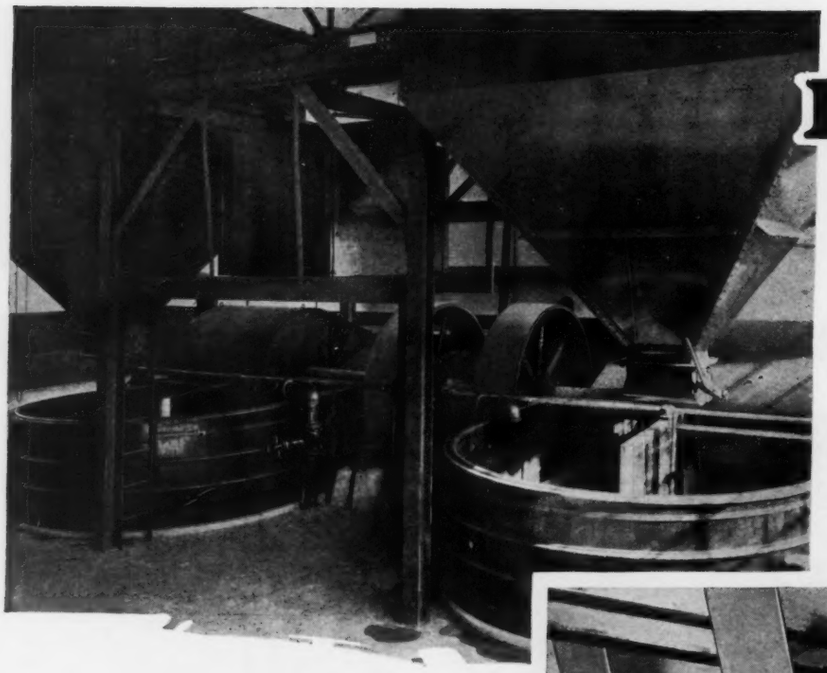
Please send me a copy of your handy data sheet on "Combination Magnetic Switches," GEA-1587A

NAME.....

COMPANY.....

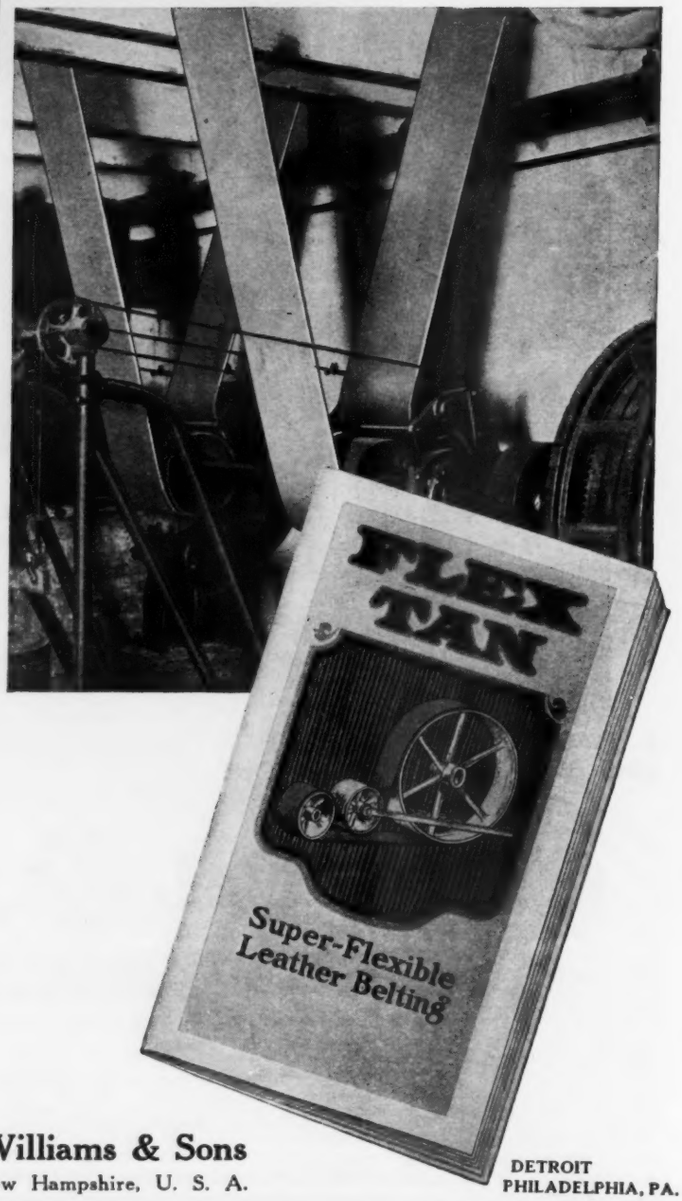
ADDRESS.....

080-4



FLEX TAN

Super-Flexible Leather Belting



For the Beater Drive in a Paper Mill

Or for that difficult drive in the textile mill which calls for the utmost in pliability, with maximum resistance to acids and heat on the part of belting—the place to use Flex-Tan.

Made with waterproof cement—impervious to moisture; guaranteed to stretch no more than oak tanned leather and with tensile strength equal to the best leather belting. Flex Tan Belts are the constant choice of textile mills and other industries wherever unusual working conditions prevail.

Maximum durability, efficient service make the first cost of Flex Tan a real economy. If you need exceptional Belting service send for the Flex Tan Belting Booklet.

CHICAGO
NEW YORK
GREENVILLE, S. C.

I. B. Williams & Sons
Dover, New Hampshire, U. S. A.

DETROIT
PHILADELPHIA, PA.

Rigid Frame Construction—Stator core is rigidly and permanently held in position by four steel angles which are welded to the laminations.

Sturdy Cast Brackets—Brackets are securely fastened to stator core by four heavy through-bolts.

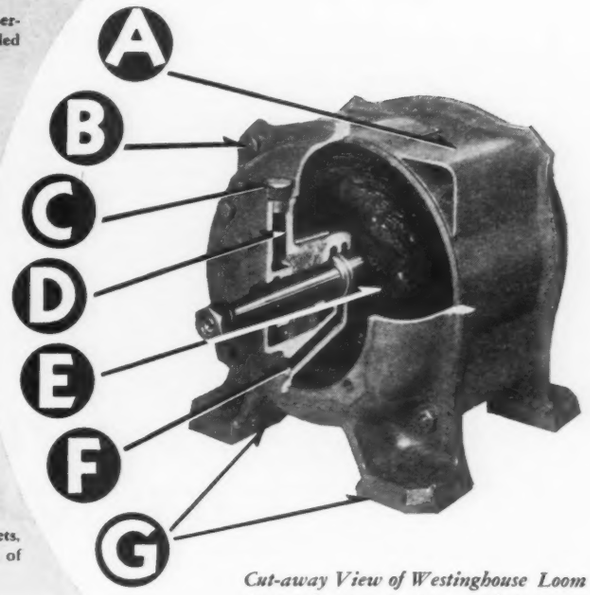
Convenient Oiling—Convenient, easily accessible oil-hole cover is used. Snap lid prevents entrance of dirt and lint.

Leak-Proof Bearings—Oiler placed well above waste packing prevents possibility of lint wicking oil from the bearings.

Non-Shifting Rotor—Rotor is keyed to shaft and prevented from shifting endwise by steel plates welded to the shaft.

Overflow Drain—If the bearing is over-filled with oil, the excess oil flows outside the motor. This feature prevents oil from leaking into the motor windings.

Well Braced Feet—Motor feet, cast integrally with brackets, are of heavy section to withstand the shocks and vibration of modern high-speed looms.



Cut-away View of Westinghouse Loom Motor showing its improved features.

THE 40-HOUR WEEK

DEMANDS *full-time* WORK

FROM LOOM DRIVES

● The shorter working hours of the Textile Code make it vitally necessary that you eliminate every possibility of equipment failure—and consequent production loss.

Westinghouse loom drives, motor and control, have many unusual features that insure dependable, trouble-free performance . . . performance that keeps high-speed looms on the job full time, day in and day out.

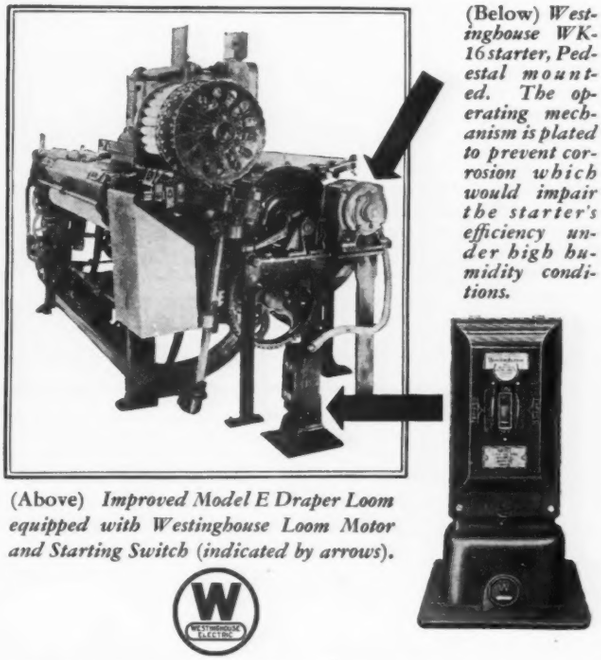
Motor—The sturdy motor is unaffected by the severe vibration of the modern high-speed loom. High humidity will not damage the windings; they are given three separate impregnation treatments to make them moisture-proof. The oil supply in the bearings is safeguarded against loss by special anti-wicking oilers and there are no openings below the oil level.

Starter—The WK-16 starter provides automatic protection for the motor against maintained overloads by means of the well-known Westinghouse Built-in-Watchman Thermostat. Pedestals for either single or double mounting are available.

Let us tell you about all the features of Westinghouse Loom Drives that insure low-cost performance and eliminate production delays. Simply mail the coupon.

Westinghouse

Quality workmanship guarantees every Westinghouse product



(Above) *Improved Model E Draper Loom equipped with Westinghouse Loom Motor and Starting Switch (indicated by arrows).*

(Below) *Westinghouse WK-16 starter, Pedestal mounted. The operating mechanism is plated to prevent corrosion which would impair the starter's efficiency under high humidity conditions.*

SEND FOR INFORMATION

Westinghouse Electric & Manufacturing Company
Room 2-N—East Pittsburgh, Pa.

Gentlemen: Please send me a copy of L. 1289-A, Loom Motor Drive.

Name .....
Position .....
Company ..... T 79898
Address ..... C 2-34

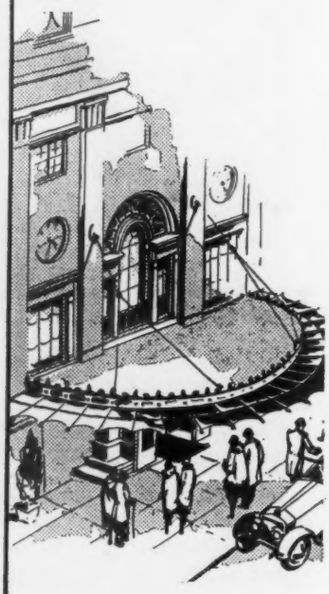
The VANDERBILT Hotel

New York City

An hotel of Distinction
with very Low Rates

Single Room & private bath $3.00

Double Room with two beds & private bath $5.00

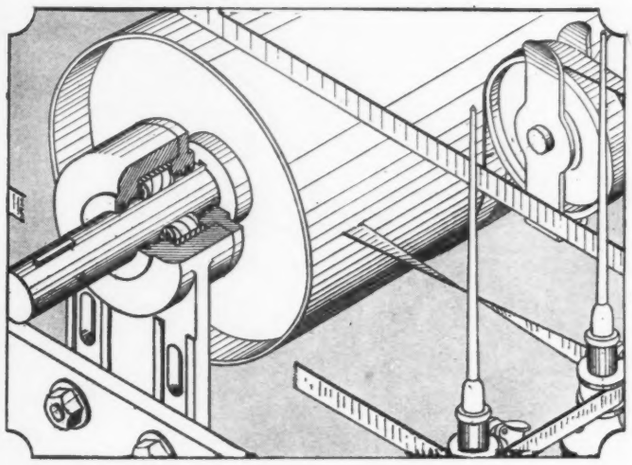


WALTON H. MARSHALL, Manager
Park Avenue at 34th St., New York

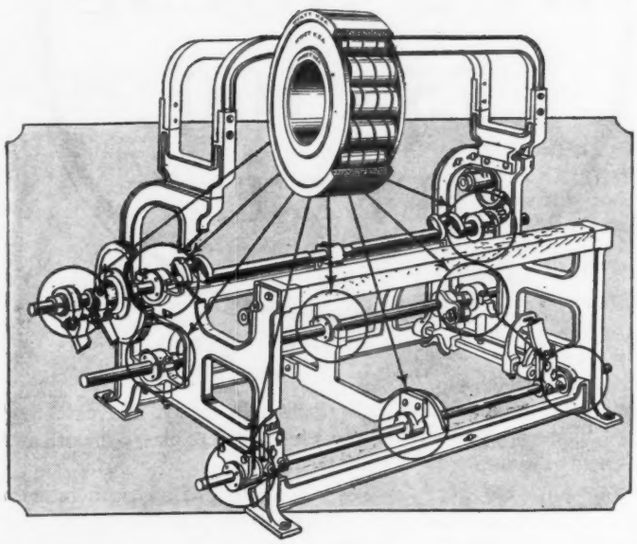
The Della Robbia Room

The Modern Mill Man

—Sees to it that the cylinder arbors of his spinning frames and twisters are equipped with anti-friction bearings; nor does he neglect the slowest motion on the frame—the pitman roller. The modern operator is open-minded and realizes the common-sense idea that these modern roller bearings prevent pound and vibration—never stick or burn out, and require almost no lubrication attention, whether speeds are fast or slow.



Then Why Not Be Consistent, Mr. Modern Mill Man, and Specify Hyatt Roller Bearing for Your Looms?



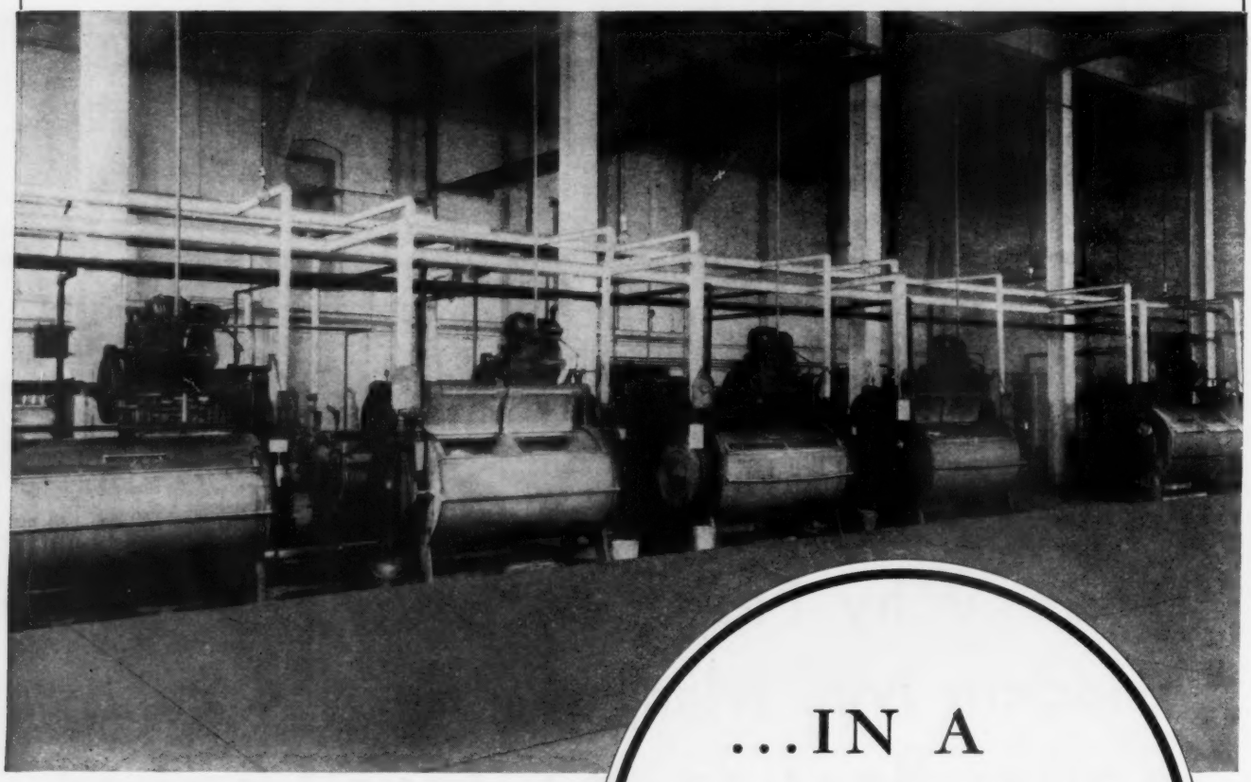
Plain bearings in looms wear out the same as they would in spinning frames—and faster too, because loom bearings get harder service. Install Hyatt Roller Bearings and prevent that wear. Stop oil spotting. Save maintenance and power bills. Increase your production. You take no chance. Someone did that for you eighteen years ago. Since then over 100,000 Hyatts have proved their case in looms. Hyatt Roller Bearing Company, P. O. Box 476, Newark, New Jersey.

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

Thousands of Dozens Daily... 300 Shades of Color



May Hosiery Mills, Inc. Burlington, N. C., showing 5 of 12 "American" Monel Metal dyeing machines. Manufactured by The Rochester Centrifugal and Engineering Corp., 110 Buffalo Road, Rochester, N. Y. (subsidiary of The American Laundry Machinery Company, Cincinnati, Ohio).

...IN A DYE HOUSE 75 x 100 FEET

...See how May Hosiery Mills stepped up dyehouse output by changing over to

Monel Metal

VICE PRESIDENT E. M. Long, of the May Hosiery Mills, Burlington, N. C., has this to say about their 18 Monel Metal Rotary Hosiery Dyeing Machines:

"With our present production, which runs into thousands of dozens per day (of men's, ladies' and children's hosiery) dyeing in more than three hundred shades of color, it is almost impossible to guess what our increased cost would be without the advantages of Monel Metal dyeing equipment.

"Our dyehouse building is 75' x 100'. With wooden equipment it would have to be at least three times its present size."

Such economy of space is astonishing. Yet the reason for it is obvious. A relatively few machines handle the whole output.

With Monel Metal equipment, tints are quickly changed. No boiling out is necessary. Unlike wood, the smooth, dense surfaces of this Nickel alloy absorb no dyestuff. Hence, no contamination; no off shades.

No rust either. Tints stay true because of Monel Metal's absolute freedom from harmful reaction with the liquors, and by its stubborn resistance to corrosion.

Over Monel Metal surfaces, delicate fibers slip safely. No catching; no tearing. They're glassy-smooth and splinter-free.

Monel's steel-like strength reduces repair bills to the vanishing point, and makes equipment last indefinitely.

Get complete information yourself about this most modern and most economical dyehouse equipment. Ask for a copy of "Modernizing the Dyehouse." Just drop us a line.

• • •

Monel Metal is a registered trademark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall St., New York, N.Y.

See what happened in the weave sheds of these two southern mills. One installed 324 Fafnir Hanger Boxes on Loom Drive Shafts. Monthly oilings gave place to annual greasings which with a 10% power saving made the installation pay for itself in 3 years.

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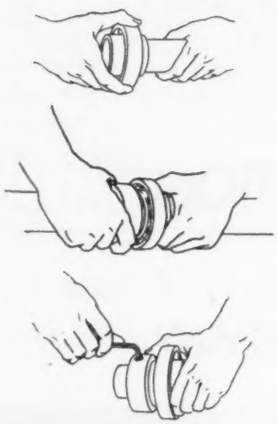

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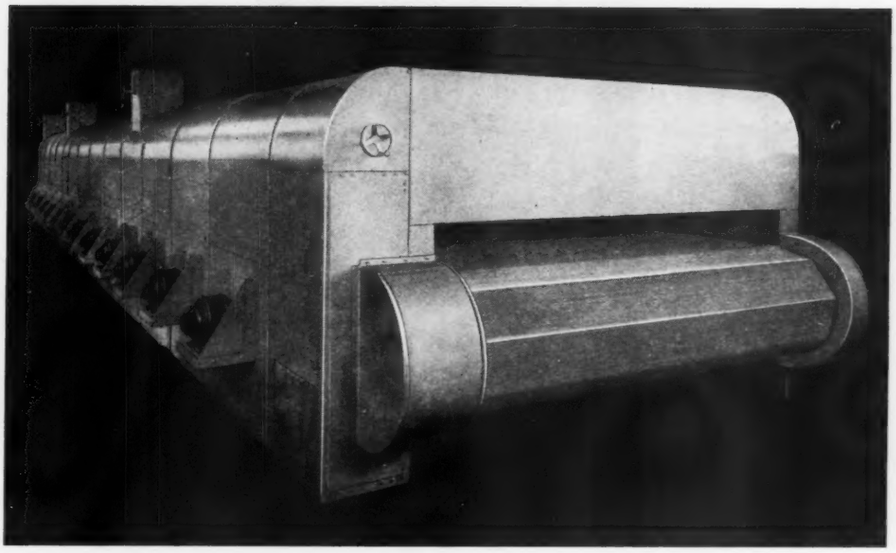

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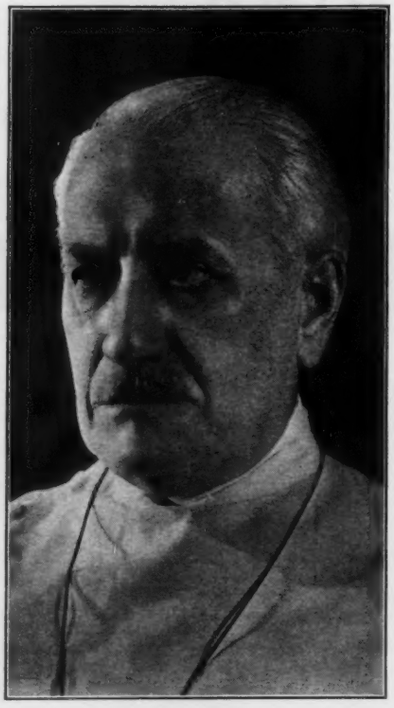

This man is typical of hundreds of leading medical men. He holds degrees from several of the most highly rated medical institutions and his opinion on many medical subjects is accepted without question by his colleagues.

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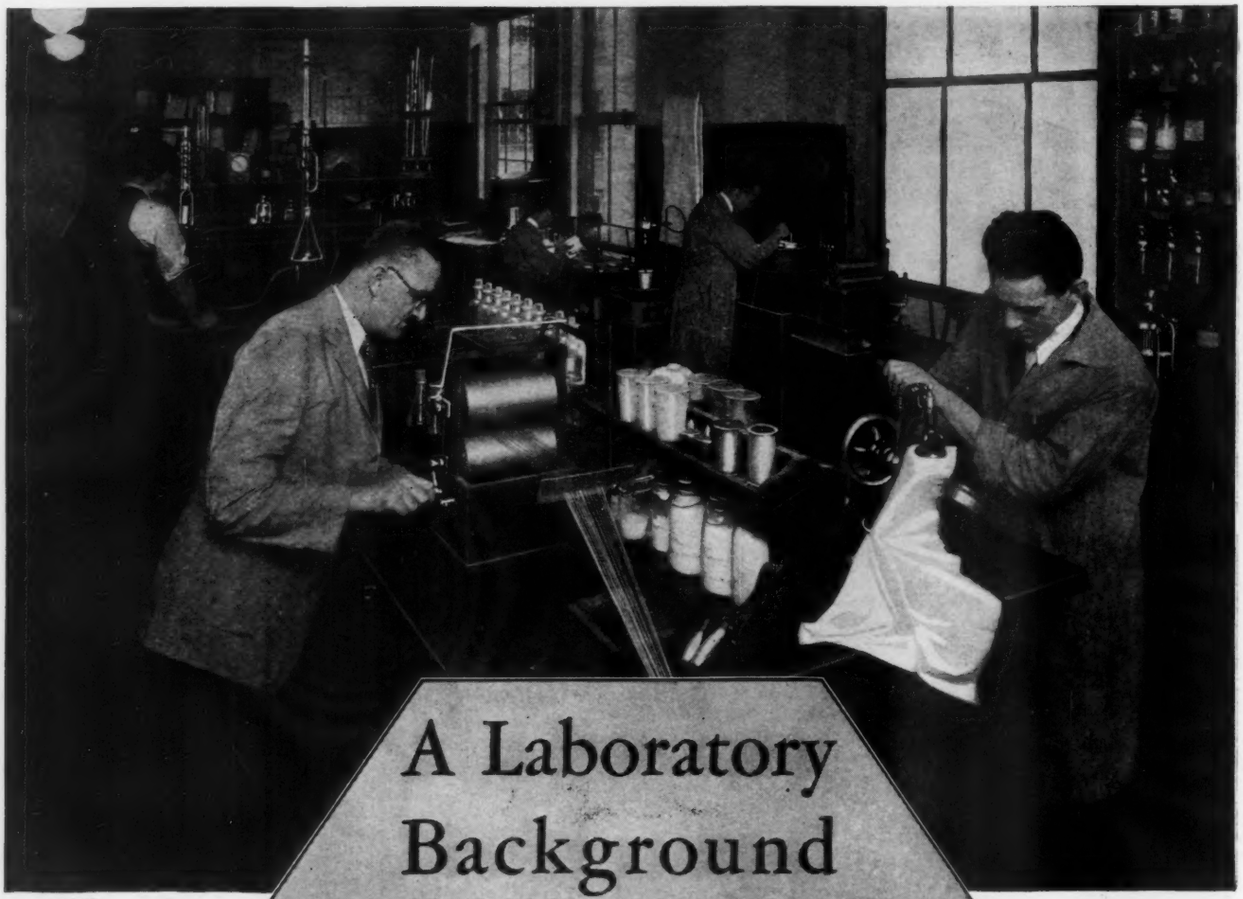

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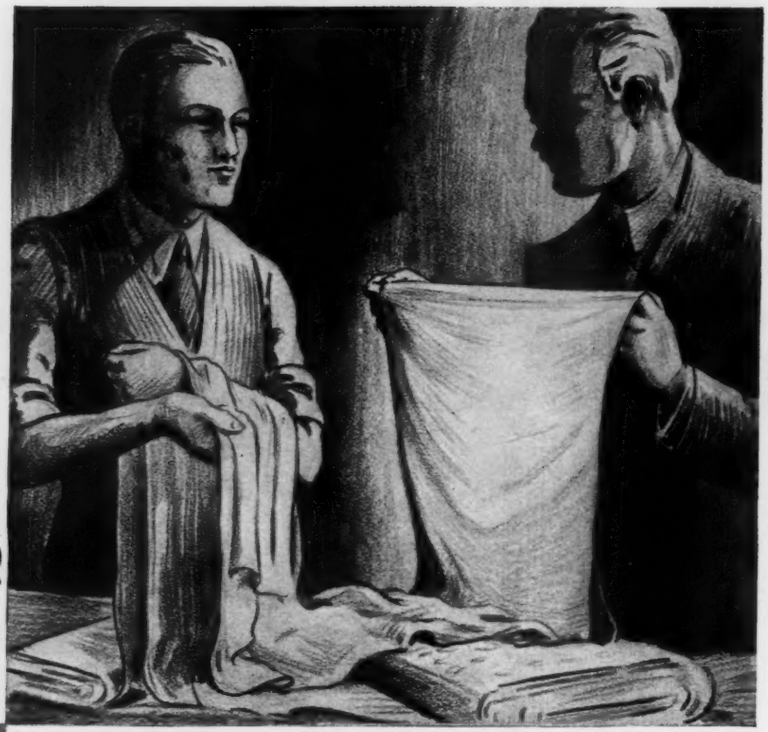

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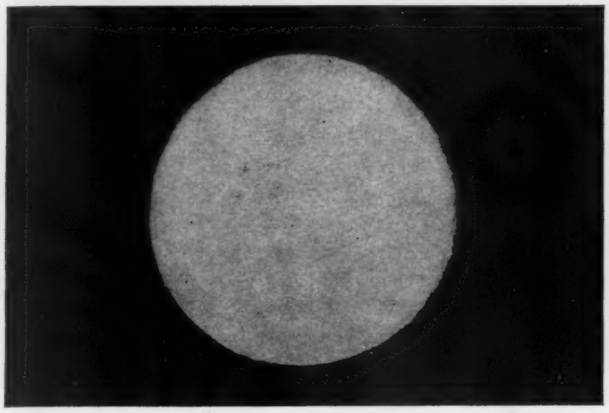

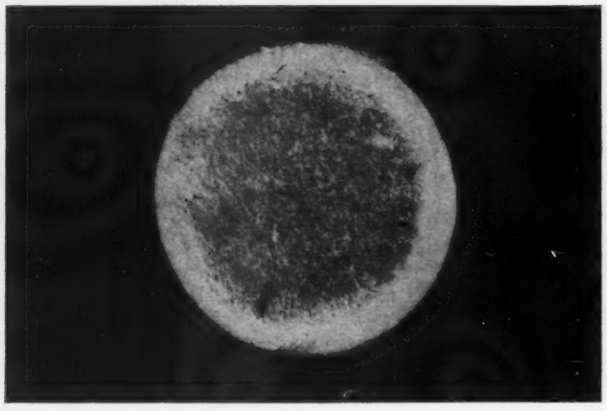

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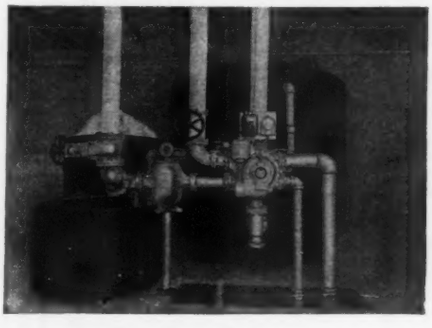

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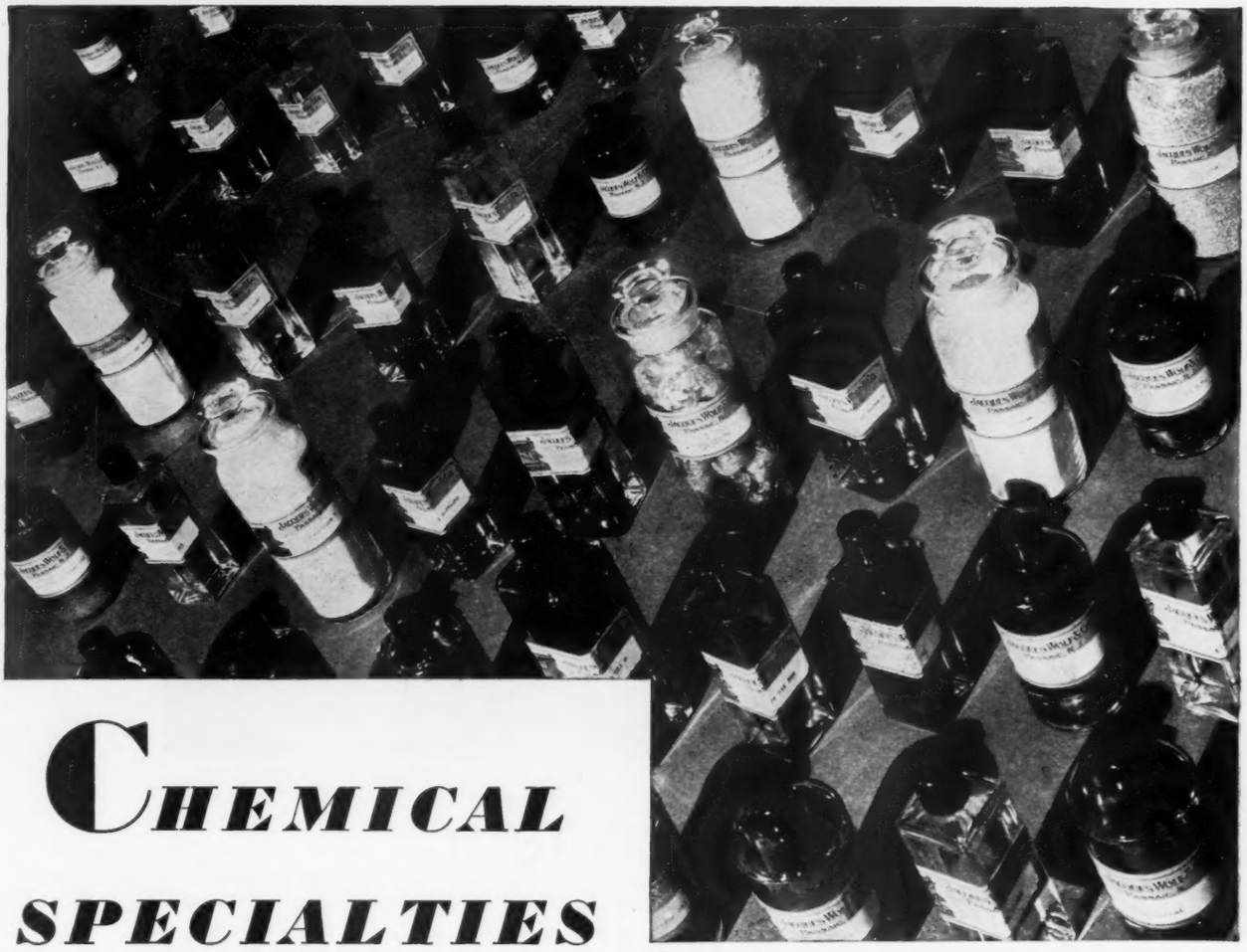

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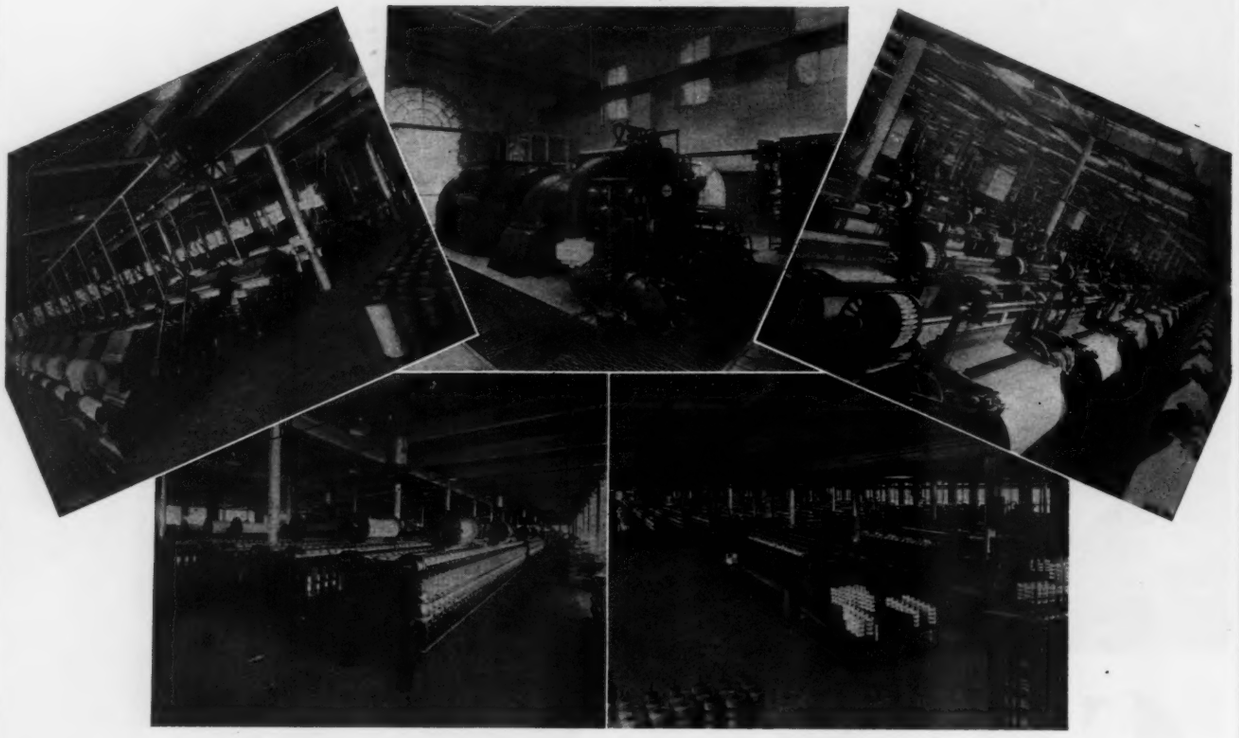

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Architects and Engineers

Vol. 98 **COTTON** No. 2

February, 1934

W. R. C. SMITH, Publisher
T. W. McALLISTER, Editorial Director ROBERT W. PHILIP, Editor

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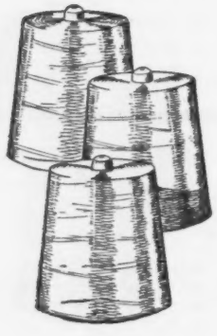

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Vol. 98
No. 2

COTTON

February,
1934

Modernization and Maintenance —and the Depreciation Account

THE theme of the special contributions to this issue of COTTON is Modernization and Maintenance of textile plants and equipment. The subject is particularly pertinent, with the industry operating under its various codes of fair competition. As one contributor puts it, just as the invention of the Colt revolver "made all men the same size", so do the labor, wage and production provisions of the various codes level off all similar plants to the same requirements, and increase the premium on economical quality production, and elimination of waste of time, power and materials. Recognition of the need for Good Management is an important result of the great economic effort of the government.

Good Management is little else than operating the plant at a reasonable profit, while paying fair wages and working reasonable hours; *and* making provision that such conditions shall continue—that profits may be earned in coming years. That means simply reserving enough of the earnings to take care of depreciation, obsolescence and maintenance, *and* displaying sufficient good sense to spend that money for the purpose for which it was saved—to keep the plant and equipment up-to-date.

The story of Modernization and Maintenance is adequately told in the special articles on the following pages—all prepared especially for this issue of COTTON, each written by a prominent figure in his respective branch of the industry. While all discuss the same general subject, each approaches it from a different angle, and covers it with a different point of view. It is felt that this variety of viewpoints, including that of the engineer, the technician, the practical manufacturer, the labor specialist and the financial executive, affords sufficient diversity of thought that the treatment of the subject does not appear monotonous nor repetitious, but, rather, stimulating and thought-provoking and, withal, more complete than would one individual's point of view. To these contributors is left the telling of the need of Modernization and Maintenance, each in his own way, covering the various subjects.

It is significant, however, that each major contributor stresses the importance of the proper setting up and use of the depreciation account in connection with Modernization and Maintenance. Thus, Mr. Wrigley: "Reserves for replacement can be most profitably invested in judiciously selected equipment. If not so expended, they are too apt to be diverted to other channels and not available at some crucial time when the plant has to meet severe competitive conditions. In a term of years, a greater total of dividends can be earned by spending the proper amount for replacements than by paying it out in extra dividends." And Mr. Paine: "Mention need not be made of the money that in prosperous years gone by has been paid out in large dividends, allowing the mill property to stand still or deteriorate. The depreciation account is a live-working account that should be spent to insure proper maintenance and modernization of the mill."

The author of the article beginning on the next page points out: "Swift and radical changes in popular demand for goods are generally seen; * * * but there is a slower and more insidious change that threatens every manufacturer, and that is the gradual evolution of manufacturing methods. These changes usually take place so slowly that an executive may not realize that his working equipment is hopelessly obsolete until it is too late to do anything about it. Profits may have dwindled until reserves have been exhausted, or depleted to the point where needed new equipment is beyond his reach.

"Money in the bank is a fine thing to have, but if there is money in the bank, the plant put it there, and the plant is entitled to its share of the money for rehabilitation. The same impulse on the part of the stockholders that impelled them to invest money and build the plant in the first place should impel them to invest money which the plant has earned and build newer and better than they did before, so that the earnings may be perpetuated, for use when obsolescence comes again."

"IF a mill has a capitalization of $1,000,000, and is barely breaking even, and the management knows where $500,000 can be spent with an annual return of 30 per cent on the money, then by spending this and increasing the total capitalization to $1,500,000, the mill can pay a good dividend on the whole amount. The million-dollar investment which was loafing has been put to work and vitalized by the infusion of new equipment. It may be hard to raise the $500,000, but if it is not done, the larger investment will soon be entirely dissipated, and become a total loss." . . . . . .

Tempora Mutantur, et Nos Mutamur in Illis, which, brought up-to-date, means:

Times Change, and We Change with Them--or Else!

By Donald D. Morton

THIS brief, pungent discussion is a fitting introduction to the consideration of Modernization and Maintenance. It comes from a man in the industry well qualified to discuss the subject, and, obviously, capable of presenting his thoughts in a forceful, readable manner.

"Keeping a mill in business is a matter of earning a profit, and the time always comes when obsolete machinery and outmoded methods will no longer earn this profit. * * * Too many managements lose sight of the fact that the business of a mill is to make money" . . . . . .

ONE of Nature's oldest laws is, "Adaptation, or Extermination", and existence is a constant struggle to keep step with changing conditions.

Several million years ago, the earth was populated with huge dinosaurs; bigger and stronger than any other animals that ever existed. The Encyclopedia says of them that "they were the dominant form of life during their time, as man is the dominant form today". As big as a locomotive, and almost as powerful; immune to attack from any but their own kind, they appeared to have the situation well in hand, with nothing to worry about. A dinosaur must have seemed to the smaller life of the time to be the most permanent and durable of all created institutions.

The Encyclopedia goes on to say, however, that "they became extinct through inability to adapt themselves to changing conditions."

Some Mills are Like the Dinosaurs

Word for word, this statement might be applied to a number of business concerns that have passed away in recent years. Many of them had been vastly prosperous, and seemed to occupy an impregnable position. Well financed; apparently well managed; they had flourished marvelously for a time. Well suited to dominate their field under the conditions which had fostered their development, they could not meet different conditions with the adaptability necessary to survive.

The fate of the dinosaurs proved that size, strength, and invulnerability to attack are not enough. Dozens of big textile mills that were dominant factors in the industry twenty years ago, but out of business today, have proved the same thing again.

The dinosaurs lived in swamps, and fed on the lush vegetation which grew so plentifully, and the small animal life that swarmed in swamp grass. They had specialized on this business of swamp grass and tadpoles for thousands of years, and their bodies had become highly developed to take care of such a diet. It agreed with them so well that a fifty-thousand-pound dinosaur was not uncommon. But when the climate began to change, and the swamps dried up, so that the grass died, and the tadpoles took to smaller puddles, out of the reach of the huge animals, it seems that instead of learning to eat something else, or practicing up on licking tadpoles up out of puddles, the dinosaurs simply sat down and patiently waited for it to rain again, and got so weak they could not stand up.

Many fine businesses have gone the same way. Developed to handle a certain product, they specialized in it until they became large, rich, and powerful. Then conditions changed, and the management simply waited "for things to get back to normal again". Look at the prosperous concerns that used to make braid for trimming dresses; those that made women's knit cotton underwear and stockings; the buggy whip factories; the big gingham mills—to mention only a few. Some of the finest textile plants in the country made gingham, and made a great deal of money doing it. The owners of some of these plants could no more imagine a country without gingham, than a dinosaur could imagine a country without swamps. But a lot of the big, rich gingham mills are out of business, along with the dinosaurs, the dodos, and other creatures that would not change their ways when changing time came.

Swift and radical changes in popular demand for goods are generally easily seen, and the manufacturer has time to make up his mind about either changing his product or quitting business. But there is a slower and more insidious change that threatens every manufacturer, and that is the gradual evolution of manufacturing methods. These changes usually take place so slowly that an executive may not realize that his working equipment is hopelessly obsolete until it is too late to do anything about it. Profits may have dwindled until reserves have been exhausted, or depleted to the point where needed new equipment is beyond his reach.

The only sure way to get up-to-date is to keep

up-to-date. Sometimes this means only changing methods; sometimes it means a complete change of machinery; frequently it means both. In a highly organized and closely competitive industry like textiles, it is the aggregate of minute economies that makes a plant profitable; the days of big profits for the rank and file of mills are probably over, as there are too many concerns ready to pounce on an order as soon as it is offered. Profits are going to have to come from lower manufacturing costs, and under the NRA these can come only from better equipment, more skillfully operated.

With fixed minimum wages and fixed maximum hours, mill owners might as well make up their minds to modernize their plants or turn them over to the junk man. And when new machines are installed, they must be well kept up, or the junk man will get them anyway. First class maintenance has kept many an obsolete plant in the running these past few years, and first class maintenance will keep many a fine new plant in the profits for many years to come.

The determining factor in spending money for new equipment, or for fixing up old, is "Will it pay?" There is no sense in buying something just because it is new. Perhaps old machines can be altered to operate under new principles just as well as new machines. Perhaps machines that appear to be worn out merely need a good overhauling, and replacing them with new would be a waste of money. On the other hand, machines that are basically obsolete are fit for nothing but the junk pile. Illustrations of the three conditions just mentioned can be found in picking, carding, and spinning machinery. Old pickers can be changed to the new single process method of operation, and do entirely satisfactory work. Old cards can nearly always be overhauled and re-clothed, and the cost is far below that of throwing out the old machines merely for the satisfaction of having new equipment. Old spinning frames can very seldom be modernized successfully. If the gauge is too narrow, and the package too small it would not be wise to change them to modern long draft frames, even if the change cost very little. They are basically obsolete. There will be exceptions to these examples, but they illustrate the point.

There was a mill which greatly increased the number of sides per spinner by installing a very complete opening, cleaning, and picking system. Many a mill treasurer would have been content to pat himself on the back over an increase of 40 per cent in spinning room efficiency, and feel that he had done enough by so greatly lowering his costs with his old equipment. But this management was not satisfied, and very soon threw out the old frames and replaced them with the latest new equipment. The great improvement made on the old machines through better preparatory processes had shown that the mill was making good enough roving to take full

Opening room with blending feeders delivering onto a feed table . . . .

Courtesy, Saco-Lowell Shops

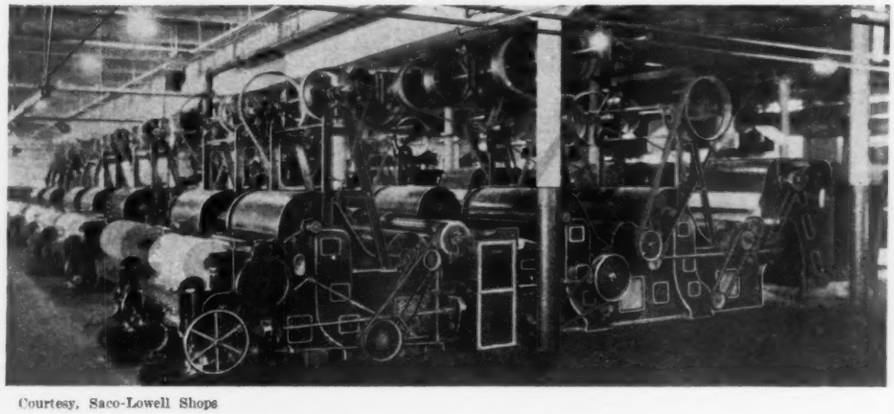
advantage of the new long-draft system, and that the cost of new machines would be well justified.

There was another mill—built for medium counts—which went on to coarse work. It was short of cards, and had to put through a production about twice what it should have been. To do this required a higher grade cotton than the product really needed, and they paid a fat premium for it. A very fine opening and cleaning system enabled this mill to use cheaper cotton, and yet get really better results, because the lower grade cotton was cleaner when it reached the cards than the better cotton had been before.

Another plant which was in the same predicament, not only put in the opening and cleaning equipment, but by converting its pickers to the single-process system, gained enough floor space for extra cards to be installed.

One mill, with practically new machinery, was having trouble keeping down costs. Inadequate humidification, a shortage of cards, and too dirty cotton seemed to be the trouble. A better cleaning system relieved the cards of unnecessary work, and a first class humidifier outfit promptly brought up the spinning and weaving efficiency.

Still another plant put in a new boiler system with automatic stoker, and



Courtesy, Saco-Lowell Shops

A view of a New England picker room, showing seven lines of one-process pickers which have been changed over from two-process . . . . .

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THROW out what is worthless; change over and repair what is good; and when you have it fully up-to-date, keep it that way. Keep everything repaired properly; watch every item of maintenance; see that the machines are always in such condition that they can operate at top efficiency and make money against the day when they will become obsolete again" . . . . . .

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found that they used cheaper coal; less of it, and required less labor to handle the coal. In another instance, the old boilers were in good shape, and of good design, so that by adding the automatic stoker equipment there was an annual return of well over 100 per cent on the investment.

A large mill, suffering from a power shortage, and also needing a new humidifying system, put in one using compressed air; drove the air compressor with a synchronous motor; and raised the power factor enough to get the power for the humidifying system for nothing.

Keeping a mill in business is a matter of earning a profit, and the time always comes when obsolete machinery and outmoded methods will no longer earn this profit. If a mill has a capitalization of $1,000,000.00, and is barely breaking even, and the management knows where $500,000.00 can be spent with an annual return of 30 per cent on the money, then by spending this and increasing the total capitalization to $1,500,000.00, the mill can pay a good dividend on the whole amount. The million dollar investment which was loafing has been put to work and vitalized by the infusion of new equipment. It may be hard to raise the $500,000.00, but if it is not done, the larger investment will soon be entirely dissipated, and become a total loss.

Too many managements lose sight of the fact that the business of a mill is to make money. Too many managements have felt that they had to "keep the mill running full" regardless of the sacrifice entailed in doing it. There has been enough money deliberately lost "keeping mills running full" to have put the mill in such shape that it could take its fair share of the available business at a profit. A mill that runs 24 hours a day and produces 3,000,000 pounds of goods a year at a loss, is a failure; while the same mill running 8 hours a day and producing 1,000,000 pounds of goods at a profit, is a success. Instead of sitting up nights trying to think of ways to reduce his overhead expense, many a treasurer would have saved his mill by putting in the same effort trying to think up good ways to increase the overhead—and cut the operating expense.

Money in the bank is a fine thing to have, but if there is money in the bank, the plant put it there, and the plant is entitled to its share of the money for rehabilitation. The same impulse on the part of the stockholders that impelled them to invest money and build the plant in the first place, should impel them to invest money the plant has earned and build newer and better than they did before, so that the earnings may be perpetuated. If the plant has made money, it should be kept in such shape that it can keep on making money. Usually the money in the bank is only a small fraction of what the plant has earned, and to hoard that money while the plant that earned it is crying for help is a very short-sighted policy.

A vista down an alley of a modernized weave room in a mill on fancy goods

Courtesy, Crompton & Knowles Loom Works

It has been years since there has been the incentive to buy new machinery that exists today. You know how many hours a week you can run the mill; you know what wages you have to pay the help. You know that all your competitors must do the same. Whatever advantage you may possess will come from smarter management and better equipment and better help. In the past twenty years a great many basic improvements have been made in machines and methods. Yet the average mill is more than twenty years old, and unless it has been kept up-to-date it must contain a great deal of obsolete machinery. As more and more mills get up-to-date, those that have not done so become more hopelessly obsolete, and more incapable of competing with their better equipped neighbors.

If you have a plant that is worth fixing up, by all means do it. Throw out what is worthless; change over and repair what is good; and when you have it fully up-to-date, keep it that way. Keep everything repaired properly; watch every item of maintenance; see that the machines are always in such condition that they can operate at top efficiency and make money against the day when they will become obsolete again and will have to be thrown out in favor of newer and better things.

Modernization Opportunities in the

Replacement of Mill Equipment

A review of some of the more outstanding things that will earn profits on their costs, directly or indirectly . . .

By George Wrigley
J. E. Sirrine & Company, Greenville, S. C.

A LEADING southern mill engineer presents here a review of modern equipment available for the cotton-textile mill, the dyeing, bleaching and finishing plant and equipment auxiliary to these mills. It is informative and comprehensive . . . The absolute need of using money set aside as Depreciation for rehabilitating the plant property and equipment is stressed . .

RESERVES for replacements can be most profitably invested in judiciously selected equipment. If not so expended, they are too apt to be diverted to other channels and not available at some crucial time when the plant has to meet severe competitive conditions. In a term of years, a greater total of dividends can be earned by spending the proper amount for replacements than by paying it out in extra dividends.

Replacements should be made in accordance with a carefully prepared and budgeted plan, taking into consideration the condition of the plant as a whole, the probable future market, the annual amount to be spent, the selection of the most important equipment to be replaced, the probable returns on the investment and other necessary factors. The replacement process should be nearly continuous rather than sporadic, keeping the plant as near as possible to its maximum efficiency at all times. The plan for any plant should depend on the age and condition of the plant and be sufficiently flexible so that it can be changed as needed to fit unforeseen and changing conditions.

Engineering knowledge and judgment, acquired from wide experience, are desirable in determining the plan, the allocation of expenditures and the selection and arrangement of equipment.

There is available a considerable array of profit earning equipment. This article is not intended to cover the entire field but to review some of the more outstanding things that will earn profits on their costs, either directly or as they affect the plant as a whole.

The new Code hours have had a marked effect on manufacturing costs, involving overhead, labor, power and many other items. Some mills have changed from a single shift and others from the longer double shift to the double shift of 80 hours. It is well to consider the effect of this change for each plant and make whatever adjustments and changes are necessary.

Maintenance costs for a number of years are less on new than on old equipment and this factor should be credited to replacements.

Buildings

The replacement of textile mill buildings is not generally justified. They were usually well designed and built, and even if forty years old or more, are still functioning properly. It is true that more modern buildings give better natural light and more stable floors for machinery, but their costs could not be justified by these factors alone. Building expenditures more properly come under the classification of maintenance. Replacement of building parts should be done as necessary and in this connection the use of steel sash, treated timber and decking, and roof insulation, should all be considered.

Manufacturing Departments

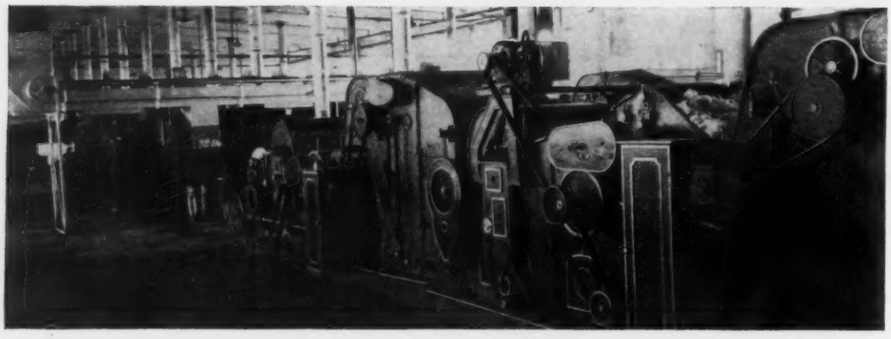
THE OPENING ROOM—Present day practice demands opening machinery that will effectively open cotton from tightly compressed bales and expose the leaf and foreign matter embedded in the lumps so that it can be readily removed. There are several types of opening equipment available and it is necessary to choose the one best suited to the conditions under which it has to operate. It is important that the machines be arranged in the proper sequence to avoid breaking the foreign matter into small particles, and to remove it as soon as possible, before it is ground up in the subsequent cleaning processes. It is desirable to let the cotton "age" for twenty-four hours or more before being fed to the cleaning machines. Ageing bins may be simply arranged for hand feeding or more elaborately equipped with mechanical distributors, where several grades of cotton are handled. After ageing, the cotton can be fed to the cleaners and from them at a uniform and controlled rate to the picker room.

Several combinations of cleaning machines are available, each having peculiar advantages. All cleaning possible should be done in the opener room and the machines should be selected that are best adapted to the cotton being used and the requirements of the particular mill.

The proper blending of cotton is now receiving

the important consideration it deserves and is being best accomplished by the use of several small capacity feeders instead of one or two large ones. This gives a much more uniform mix from a large number of bales with a resultant improvement in the raw stock and yarn. Occasionally, feeders from old pickers can be used for this blending operation.

THE PICKER ROOM—The one-process pickers are designed primarily to produce a cleaner and more even lap, yard after yard as well as across the width. When the greater part of the cleaning is properly done in the opener room, the product of these machines is improved in quantity and quality over that of the old separate machines, and the power consumption of the system is lowered. Many mills have connected their old pickers to form one-process machines. While these rebuilt units are a great improvement over the old separate machines, especially where they have been supplemented by new parts as needed, they cannot be expected to give quite as good results as the completely new machines of present day design. Equipment is available for separating the picker dust from the fan exhaust, so that the same air may be used over and over again, permitting the picker room to be properly and economically air conditioned and heated.



Showing an installation of 15 new model one-process pickers, supplied by a rake distributor . . .

Courtesy, Whitin Machine Works

THE CARD ROOM—Many mills were built with what is now known to be an insufficient number of cards, resulting in the overloading of these machines and inferior quality of sliver. It has been found desirable in many cases to increase the number of cards in order to improve the operation of subsequent processes and to give the better quality of yarn demanded by the trade.

One of the most important machines in the mill is the drawing frame. Generally the older machines will do very well if the rolls are of the proper size and not worn badly. Re-working, rather than replacement, may be the economical thing to do for this process, although some of the newer designs of drawing equipment offer advantages that may easily justify the costs, each case having to be settled on its own merits.

Fly frames, as a rule, are generally in better maintained condition and show less obsolescence than other mill machinery, largely due to the relative lack of design change.

Good maintenance requires that the flyers be straightened, polished and balanced and that the spindles be worked over to put the frames in best condition. Considered as a department and tied in with the subsequent process of spinning, it is sometimes possible to omit some fly frames by installing long draft in the spinning room. The omission of these frames may provide floor space for extra cards.

THE SPINNING ROOM—When replacements are considered, interest frequently centers on the spinning. These machines have been improved more in general and detail than any other major equipment. New frames have the outstanding characteristics of a greater number of spindles, wider gauge, longer traverse, tape drive, safety features and generally long draft. These features make for larger packages, both in creel and on spindles, less doffing, less creeling, faster operation with increased production, steadier running with better quality of yarn and lower cost of operation. While some old frames that have been well maintained are still operating economically, the effect of improvements has practically made the older frames obsolete. This is especially true of warp, but, to a lesser extent, also of filling frames.

It is sometimes advisable to install a few of the newer type frames as a step in the replacement program, allowing the operatives to get familiar with the new equipment and prepared for the complete change over.

The change to new frames should be carefully planned to get the best length of frames and to see that the specifications are in line with all the worthwhile features of modern practice adapted to the special requirements of the individual mill. New spinning nearly always involves changes in bobbin sizes and re-organization of weights and drafts in the card room, which should be carefully checked.

A number of mills have comparatively modern spinning frames in operation and for them long draft attachments are available. These parts cost more per unit than when incorporated in completely new frames and their value may be debatable, depending on the conditions in each case and only properly decided by exact facts.

The whole question of long draft, or better drafting, involves so many factors that unbiased judgment gained from wide experience is desirable in making a recommendation. Some yarns can be suc-

cessfully made from single intermediate roving, allowing the discarding of all fine frames and the use of only two processes of roving in the card room. Other yarns should be made from double roving, requiring all three roving processes, but for such cases, coarser roving may be used, allowing the discarding of some machines in each process. One very recent development is long draft attachment roving frames and the possible use of this must also be considered. Where replacement is not advisable and it is necessary to continue the operation of the old frames, they should be completely re-worked, including the straightening and re-fluting of the rolls, re-necking them where necessary, straightening and re-pointing the spindles, and machining the whirls to a uniform diameter. These maintenance details, if properly done, do not involve a relatively large expenditure and earn their cost in much better operating results.

Roller bearing spindles give a definite saving in power consumption, lower maintenance cost for lubrication, cleaner yarn due to lessened oil vapors, and less heat in the room. It is claimed that they also give steadier running spindles and less tape wear. Against these savings must be charged the fixed charges on their extra cost.

THE WARP PREPARATION DEPARTMENT—The older methods and equipment for warping and spooling have been forced into obsolescence by the modern automatic and high speed machines for this department. With them it is possible to retain the elasticity and improve the weaving quality of the yarn. While differences of opinion may exist as to the best equipment for any mill, either type is so far ahead of the older systems as to deserve serious consideration in any plan of mill replacements.

THE SLASHER ROOM—In the slasher room considerable attention and research have been directed to the development of automatic controls for the proper cooking, storing and handling of the size and the drying of the yarn to predetermined standards for uniform product. These controls insure better preparation and penetration of the size together with more uniform drying that lessens mildew without baking the life out of the yarns. Properly designed circulation keeps the size in uniform condition until used. Exhaust systems can be rebuilt to provide subdivision of the ducts and fans into smaller units, providing better working conditions and distinct savings in power consumption.

Conditioning of filling yarn is taken care of by machines designed for small or large mills.

THE WEAVE ROOM—Loom manufacturers have kept their product in line with progress in other departments and offer machines that are substantially better in production, quality of output and smoothness of operation than the older ones. Many of the old looms are still operating profitably and their immediate replacement may not be economically justified. Many old looms can be operated successfully at higher speed. Their competitive position does become weaker as new looms are installed in other mills.

THE CLOTH ROOM—Cloth room machinery has not generally undergone very radical changes. Some machines can be profitably changed to operation in range. Improvements are available in brushers, shearers, automatic guiders, with better inspection arrangements.

Bleacheries and Dye Plants

Singeing equipment, using high compression gas burners and giving speeds approximately 400 yards a minute are now being used to replace older equipment.

Motor driven mechanical pilers for the kiers reduce labor cost and give better results.

Old style injector systems for kiers are being replaced with pump and heater type circulating systems.

A southern mill has this complete equipment of new controlled draft drawing frames . . .

Courtesy, Saco-Lowell Shops

Mechanical pilers are also advantageously used for the bins.

Machines should be put in range wherever practicable, saving the labor of unnecessary handling.

Newly designed tenter housings and heating system give greater drying speeds with lessened power and steam consumption. Equipment has been developed for recovering the heat from waste dye and kier liquors and wash waters.

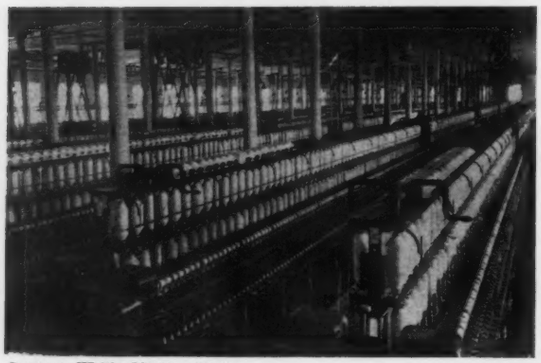
The speed of dyeing has been greatly increased by modern processes and equipment. Package and beam dyeing is rapidly superseding raw stock processes.

Rectification equipment for conditioning process

water reduces manufacturing costs by savings in chemicals and dyestuffs, and by decreasing seconds and returns. Waste water may be successfully treated to stop stream pollution. Proper treatment of boiler feed water, involving comparatively inexpensive equipment and low operating costs, eliminates the troubles due to scale deposits and corrosion.

Power

Mills operating on purchased power contracts that contain maximum demand clauses are directly interested in the effect of changed hours of operation as applied to the cost of power. It is important that this demand be kept as low as possible consistent with flexible and complete operation of the plant. Instrument equipment is available for sounding an alarm before a predetermined maximum is reached, allowing the manual or automatic stoppage of some machinery that can be as well operated at off-peak times. In some of the larger contracts where demand is based on kva, this demand can be reduced by means of capacitors at a considerable saving on their cost.



Courtesy, Whitin Machine Works

A recent long draft spinning installation

Mills that own water power plants will generally find it profitable to replace the old wheel units, not only on account of the inherently higher efficiency of the newer designs, but by the more correct proportioning of the wheel to the supply of water available since the changes in operating hours and the diminution of storage from silting.

Air Conditioning

The trend of air conditioning systems is to provide better distribution and more uniform, with lower maximum, humidity by the use of a greater number of smaller units and reliable central controls.

Especially in spinning and twister rooms, a slight amount of cooling and better distribution are obtained by pre-treating air brought in from the outside, maintaining a small pressure in the room and allowing the escape of some of the heated air.

Heating

Unit heaters have replaced the old coil systems for all new construction and when coils are badly corroded can profitably be used for replacement. The present tendency is toward the use of fewer and larger units, allowing lower temperatures and higher velocities of air with resulting better distribution.

The cooling of drinking water can be taken care of by distributed electric driven units or by a central, steam operated, vapor equipment having no moving parts or chemicals.

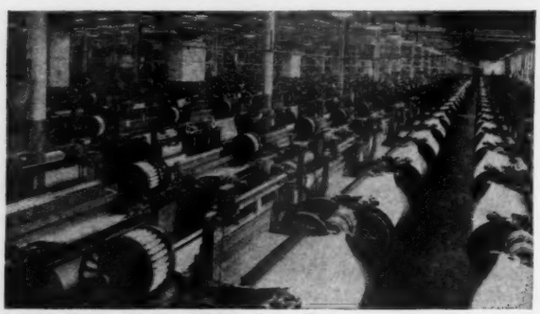
Many mills are operated on purchased power but require small steam boiler plants for heating and slashing. The cost of operating these plants can be materially lowered by the installation of small stokers and feed water regulators providing, as they do, lessened coal consumption, the ability to carry larger loads and to burn a less expensive coal, the elimination of smoke nuisance, lower labor costs, more uniform steam pressure with drier steam and the ability to better care for fluctuating loads.

Fire Pump

Where purchased power is available, an electric motor driven fire pump allows the complete shutdown of the steam plant over week ends and holidays, for many months of the year, saving coal used for banking fires. This saving in fuel, especially under the new hours of operation, makes a substantial return on the investment.

Motors

Old large group drive motors can be replaced with smaller motors and short center drives, one to each line of shafting, with resultant maintenance of speed on each line. Short center drives are generally chains, V-belts or pivoted base motor, flat belt types. Individual motors are practically standard for new spinning frames and looms, with the advantages of increased production, cleanliness and better light conditions.



Courtesy, Draper Corp. and Robert & Co., Inc.

Part of an installation of X Model looms

Lighting

Accepted standards of satisfactory artificial lighting intensities have so increased from year to year as to make all old lighting systems obsolete. A properly designed replacement system must fill its primary function of enabling the operatives to see the work and this must take into consideration all factors of glare and distribution as well as of intensity. With lighting, as with other auxiliary service, replacement is not justified unless it will earn its own way in decreased seconds, better general quality and increased production. Old lighting can be improved by systematic cleaning of reflectors and maintenance of proper voltage at the lamps.

In keeping with the Modernization and Maintenance theme of this issue, this department "lifts its voice" in behalf of:

The Modernization of Our Economic Thinking

In doing so, it accepts the issue as to labor-saving machinery and its restriction, and adequately disposes of the question with a broad interpretation of Progress . . . . . .

A FEW weeks ago we were privileged to visit a mill in the process of modernization of its carding and spinning departments. We were particularly impressed with the new long draft, large package spinning frames, whose superiority to their forty-year-old forebears was evident even to an inexperienced eye. Then we were told this startling fact: One result of the modernization of the spinning room would be the elimination of approximately one-half the employees required to operate the old equipment.

In this day of the Blue Eagle, of nation-wide effort to supply jobs to as many people as possible, this result of modernization is truly startling. To many it smacks of economic heresy. Over the course of the last several months we have often heard it expressed that until the depression is definitely behind us and shortage of labor is felt again there should be restrictions on the installation of labor-saving machinery.

Such a viewpoint lacks breadth. It does not consider the men in the mines who must cease their digging if their ore be not converted into useful products, nor the vast army of mechanics whose livelihood depends on the building of machinery, nor the men in the steel plants, on the railroads, etc., etc. Upon the earning and purchasing powers of all these men in related industries depend the advancement and prosperity of the textile industry.

But the shortsightedness of the idea that labor-saving machinery should be banned, even temporarily, does its greatest harm in striking at one of the cornerstones of American progress. One of the fundamental reasons for the advancement of this nation to its leading place among the nations of the world is its search for and acceptance of mechanical short-cuts. It has been said that man's supremacy in the animal kingdom is due to his being a tool-using animal. It is indisputable that the more efficient, more productive his tools are, the more highly developed is his civilization. Temporary, localized hardship is often the result of such mechanical improvement; the eventual result is a more abundant life for all the people.

A few years ago we received a circular from an organization in India offering, as we recall, thirty-five thousand dollars to the person who would devise a machine that would meet certain requirements in the carding and spinning of cotton in the homes of that country. Such a movement away from efficient, mass production to the old, individual production basis is the restriction-of-labor-saving-machinery idea carried to the extreme. The contrast between the standards of living of the people of that country and this shows the power of ideas.

A leading U. S. economist has used Federal Reserve Board figures on manufacturing establishments to show the effect of the improvement in mechanical processes. Reducing the figures to index numbers and taking the 1923-1925 period as average with employment at 100, production at 100, and output per man at 100, he found in January, 1920, employment at 177 (all time high), production at 96, output per man at 82. By June, 1933, employment was at 65, production 92, and output per man, 142. In other words, if the June 1933 efficiency had obtained in 1923-1925 only 71% of the working force at that time would have been needed to supply the demand for goods. The table embodying these figures follows:

	Employment	Production	Output Per Man
January, 1920	*177**	96	82
1923-25 average	100	100	100
June, 1929	103	*127**	123
June, 1933	65	92	*142**

**All-time high; very significant.*

Table from "What Hope for the Jobless?", by Stuart Chase, in November 1933 issue, Current History. Copyright, The New York Times Company. Reprinted with permission.

All of us can remember the 1920 days. Few if any of us would care to go back just fourteen years to the comparative inconveniences and handicaps in rural education, transportation, domestic equipment, communication, etc., we knew then. The most striking comparison we can think of is the low-priced automobile of today with that of 1920. And to mechanical short-cuts we owe much of our ability to get so much more automobile for less money and our possession of approximately 90 per cent of the world's automobiles.

And the end is not yet. No movement, even if it have a religious flavor and be led by a Gandhi, or if it be shortsighted and selfish and be led by one who mistakes himself for a champion of labor, can impede for long the use to which men's brains will

put the materials of the earth. The thing to which we should devote our thoughts and our efforts is not to retarding this mechanical progress, but to the distribution of the wealth it creates and thereby to the enrichment of the lives of the great body of the people. It is comforting to realize that the leaders of our textile industry are men with the broader vision, and to hear a high official in the NRA state that that administration is not opposed to the installation of labor-saving machinery.

There is a saying that jay-walkers are not as dangerous as jay-thinkers. The textile executive that jay-walks is the one that injures only himself or his company by failing to effect in his plant a modernization and maintenance program. But the jay-thinker can injure as many as come within the scope of his influence, which may be larger than he thinks, so that in these days of economic experiment and radical change in our social structure mature consideration should govern the expressions of men in responsible positions in the textile industry.

We leave it to others in this issue to show the advantages to an individual mill of modernization and maintenance of equipment, and we raise our small voice to plead for a thing by no means abstract: The Modernization of Our Economic Thinking.

Requirements of Good Management under the NRA Codes

By Cherry L. Emerson,
President, Robert & Co., Inc.

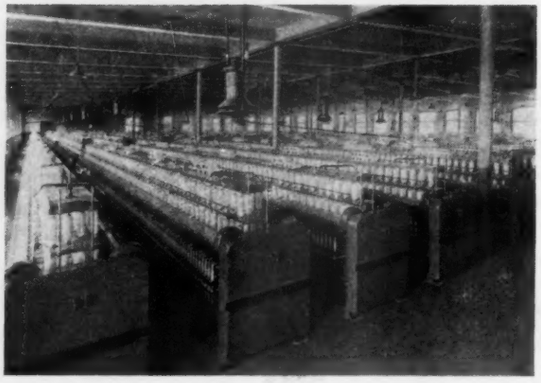
SOME humorist has said that, "the invention of the Colt revolver made all men the same size"; in the same way the imposition of uniform labor cost has put all cotton mills, regardless of location or labor policy, on the same basis of competition. The similarity still holds good in that in both cases a premium was put on skill and the value of muscle or driving power minimized. Not only has the effect of the latter been to equalize operating conditions for mills in different localities but it has also served to still further increase the percentage of labor cost as compared with all other costs in connection with production.

The reference to skill does not stop at manual dexterity, but extends even more to skill in the acquisition, selection and combination of the best possible machinery to produce the greatest amount of goods at the lowest possible cost.

In our present economic arrangement, there is no way to evade stringent competition for very long, regardless of the NRA codes or anything else. An equilibrium will finally be reached at which those mills which produce economically will make a profit and those mills which produce uneconomically will have a loss.

The increase in labor cost under the NRA has placed a premium on labor saving machinery for the same reason that the United States as a whole has become more completely mechanized than any other country in the world. It operates to accentuate this and to offer still greater inducements to mills to put in whatever machinery will get the results with the fewest hands.

While the result of the code has been to bring a very large increase in employment and while this will, undoubtedly, continue—still those mills which reduce relatively the number of employees by putting in the most modern types of equipment will be at an advantage over those which do not. On account of the extra capital acquired by the processing tax (which is not a part of this discussion) and on account of the necessity for providing expensive machinery, those mills which are in a favorable financial position are in a much better position to survive and prosper. This is merely emphasizing a condition which has always existed.



Courtesy, Saco-Lowell Shops

A southern long draft spinning job . . .

While the need for the very best of modern equipment is the first easily discerned requirement under the new deal, there is another requirement which is not so well recognized; this refers to the provisions of the very best conditions under which the machines operate. There is a higher premium, in other words, offered for regularity of speeds, uniformity of heat, temperature and humidity conditions and for the elimination of waste in fuel, electricity, water, etc. Common sense asks the question: why spend more sums for expensive textile machinery and then fail to get the most out of it? Where the motor equipment is obsolete or humidity incorrect or the speeds too slow, money is being wasted. There is another and still vaguer consideration and that is the intelligence of those who operate the machines and of those who direct their activities. Whenever the plant is geared to a higher tempo of operation, whenever conditions are more scientifically set and maintained, the need for a more intelligent human factor is accentuated.

It is not impossible that the continuation of codes and Blue Eagles may result in placing industry in this country on an entirely different and higher plane than it has ever occupied or that it now occupies in any other country of the world.

Securing the Proper Mill "Balance" by a Study of Plant Conditions

By Sidney S. Paine
President, The Textile Development Co.

Find out what you need;
Get the most from what you have;
Maintain both the old and the new;
Eliminate the bottle-necks in process;
Replace intelligently and when needed;

These are the steps recommended in a program of so balancing the plant, in its manufacturing details, that the poise of efficient, intelligent operation may be attained. The author is conspicuous for his consulting work among textile mills.

Again, we find an urge that Depreciation money be used for the purpose for which it was set aside. . . . . .

PROBABLY one of the most important elements in the everyday life of a nation or a human being is balance. Almost everything in life is a combination of extremes with the proper balance. Consider the simple table salt, which every one of us uses either in the cooking of food or on the food itself. Salt is made up of two elements, each of which is a deadly poison. Combined in a proper balance, however, they form an element of our food that is absolutely necessary.

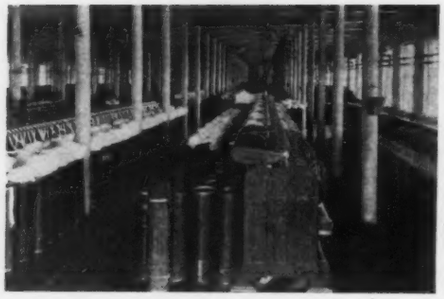
We may properly apply this balance between extremes in the operation of a textile mill. On the one hand we find every year many new and progressive improvements and methods, many of which are excellent, and some of which have no great amount of value. Probably the inventor of every new machine has been scoffed at, and no new ideas have come out without the rank and file of us human beings looking askance at it and predicting its failure—and yet many of these progressive machines or ideas acquire almost universal acceptance within a very few years of the time they were ridiculed. Many of the machines that were formerly laughed at have become so necessary to the welfare of the mills that a mill not having them cannot sell goods above cost. On the other hand, there are many men, having a given type of equipment, who blame every difficulty that presents itself on the type of equipment they have. In other words, these manufacturers do not begin to get the amount of good possible out of the equipment they possess and are continually making alibis or discarding perfectly good machinery.

There is a proper balance between these two that is the surest way to prosperity and safety. The industry needs progressive men to think up new ideas and design new machines and install new methods, but it also needs conservative men to get the most out of the equipment. Either element carried to an extreme is disastrous, but there is a sound combination of both that is most necessary for a successful mill. In a word, the combination of Modernization and Maintenance gives a very strong answer.

Twenty-five years ago one of the main subjects for discussion was the value of the automatic loom, with various pros and cons on the effect on the help, cost of weaving, quality of cloth, and what fabrics could be woven on it. Probably at that time there were more knockers than boosters, yet today, with the exception of a very small number of fabrics, a mill that has no automatic looms is decidedly out of luck. Twenty-five years ago automatic looms were a subject of debate and a target at which to throw stones, yet today they are an absolute necessity except in the classes of fabrics referred to.

On the other hand, automatic looms alone are not the answer to the question. I recently went through a weave room complete with the latest style of automatic looms and saw these looms operated at efficiencies varying from 60 to 65 per cent. The most modern looms were there, but the management was not there. The question of maintenance springs up. Not only the maintenance of looms, but the maintenance of the other machines, organizations, and practices in the preceding departments. Either element without the other is of little avail. It is a balance that is necessary. In the illustration just given, it is quite probable that before the installation of these most modern looms the superintendent told the treasurer that if he only had these modern looms the mill would be in a splendid position, yet the mill, with these looms and improper maintenance, was in a most unfortunate position.

Along another line, one of the expressions I have heard as much as anything else would go something like this, "If we only had long draft spinning frames, we should be sitting on top of the world." Yes, I agree with the man who makes a statement similar to that. A long draft spinning frame is a great help in cutting costs. On the other hand, I have seen a few mills that have spent considerable sums of money on installing long draft systems, which have thrown away a large percentage of the money thus spent. Enlarging on the latter idea, I mean putting long draft attachments on obsolete frames. I have seen mills with long draft frames whose roving is so poor that the drafts being used were no longer than the drafts found on the older type spinning frames. I have seen long draft frames where the end breakage is so high through poor maintenance, unwise organizations, or poor blends of cotton, that the spinner cannot run the normal



Courtesy, Whitin Machine Works

An installation of long draft roving

number of sides. The natural reaction in this mill is, "Yes, you have long draft frames, but what of it?"

On the other hand, I have seen many mills with old spinning frames so well kept up that they were using longer drafts than these other mills, and had lower end breakage and lower costs of spinning than the mills that had the more modern equipment. In other words, it is a case of an old automobile with good tires being safer to ride in at 50 miles per hour than a 1934 model with tires worn down to the fabric.

In my very humble opinion, the best way to modernize a mill is to start with the fundamentals, even with old machines. Almost every virtue or vice in a cotton mill can be traced to either machine conditions, blend of cotton, or organization (drafts, speeds and twists). There is nothing new in this thought. It is probably older than any of us, yet these three fundamentals are all badly abused in probably six mills out of ten, and one or two of them in at least nine mills out of the ten.

Utopia for a mill man is a mill equipped with the most modern machinery and in perfect condition, with everything tuned up so well that the manufacturing costs are considerably below the selling prices, so that the stockholders can get sizable dividends and the help paid top wages. This is the pipe dream of probably every manufacturer. We are starting the year 1934 after having gone through a serious depression that has strained the financial condition of many of our mills to the limit. Yarn and cloth prices are low. The average mill has received the bare necessities of life in the way of upkeep. Probably 80 per cent of the mills cannot afford to re-equip themselves with the most modern machinery, and many of the mills that can do so, hesitate to lay out large sums of money because of the uncertainties of the immediate future. Yet the average mill is little more than breaking even and comparatively few are making a sizeable profit, and what are we going to do about it? What can we do to get the most out of our mills per dollar that we spend?

The logical answer seems to contain nothing very radical or spectacular, but rather a logical sequence of events. The following program is proposed, not as a subject of debate but as a course of action:

1. A Complete Study of the Needs of the Mill

No house can be intelligently built, or even the foundation properly laid, until a complete set of drawings and plans have been made. Neither can a mill be completely modernized and put in first-class condition until intelligent schedules have been laid out. These schedules are based on a thorough machine study of the type of machines, physical condition of the machines, the size and specifications of the various packages turned off, a complete study of organization of drafts, speeds and twists, a study of the various causes of end breakage at the different machines, and the laying of standards of reasonable expectancy for machine operation. These things form a reasonable basis from which to start the modernization of any mill.

Six lines of a recent installation of one-process picking machines . . .

Courtesy, Saco-Lowell Sho

2. Get the Maximum Out of Present Machines

Based on the examination under topic (1), the mill should proceed to eliminate causes of the various machine difficulties and end breakage, putting the operation of the present machines in the highest state of effectiveness. The maximum economies of machines, as revealed by the organization study, should be the next step. In other words, the progressive mill will put its present house in order and get the most out of its present equipment.

3. Standardization of Maintenance

To completely re-vamp a mill and heave a sigh of relief when the job is done, is money thrown away. No mill, no matter how modern or well equipped, can prevent going down hill without a continual check-

"Mention need not be made of the money that in prosperous years gone by has been paid out in large dividends, allowing the mill property to stand still or deteriorate. The depreciation account is not a book account but is a live working account that should be spent to insure proper maintenance and modernization of the mill."

ing by men in the mill on matters of machine condition, machine operation, supplies and maintenance. Equally important, therefore, with a complete analysis of mill conditions, is the installation of a checking system to continually and periodically check all manufacturing matters.

4. Elimination of Bottle-Necks

The study referred to will probably reveal some places in the mill which obviously prevent real economies. Some of these are expensive to correct, while some are not. These should receive attention in the order of importance. As an example, a mill with the most modern equipment in the major departments cannot begin to get the desired results with a poor blend of cotton. A modern opening room to properly clean and blend cotton is considered a necessary preliminary to more extensive and costly replacements.

5. An Intelligent Replacement Program

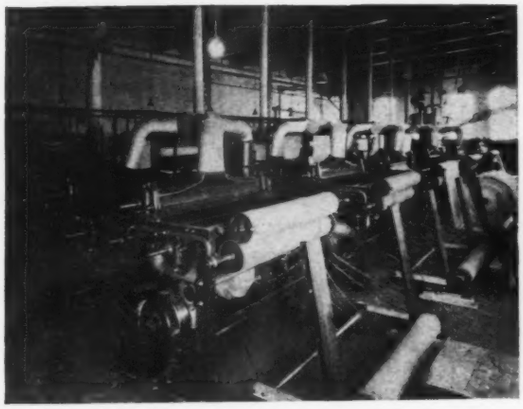
An intelligent replacement program embraces all elements affecting the cost or quality of the cloth. For instance, in a mill whose looms are old and should be replaced, the obvious question of what type of loom to buy is only one question. While this is important, it is equally important to determine how large a filling bobbin can be used for the cloths woven, and how large a beam head is practical. In other words, the replacement of the looms is not an isolated question but is part of the program for completely modernizing the mill. With these thoughts in mind, several questions must be answered. As an illustration, are the spinning frames equipped to spin a larger bobbin, both in length and in diameter? For this reason, some mills make vertical replacements. By this is meant that instead of replacing all of the looms at one time and all of the spinning frames at one time, one section of looms is replaced at the same time that a corresponding number of spinning frames are replaced. This can be carried down to the card room because of the possibilities of draft organizations requiring larger creels or wider gauge spinning.

The thought underlying the preceding paragraph is that a mill may blindly replace the machinery and have all new machines of old specifications, and have a new mill that is no more modern than a new mill of 30 years ago. On the other hand, with a complete perspective of replacements, a mill will spend no more money than in that way, but at the completion of the work have a mill that is up to the minute in every respect.

Another element in the rejuvenation of a mill is a careful consideration of what machines will be kept and what discarded when the task has been completed. As an illustration of this point, a mill may propose to put in long draft spinning, but will throw its money away by re-equipping a speeder process that will be eliminated after the installation of the long draft frames.

6. Spending the Depreciation

It is felt that the foregoing should be carried out from the depreciation laid aside. Very few mills can afford a large outlay of money today. It is felt, however, that it is a reasonable program for the average mill to spend up to the full amount of depreciation in bringing its equipment and organizations up to a competitive basis. Mention need not be made of the money that in prosperous years gone by has been paid out in large dividends, allowing the mill property to stand still or deteriorate. It is felt that the depreciation account is not a book account but is a live working account that should be spent to insure proper maintenance and modernization of the mill. The depreciation figures allowed by the government are not theoretical figures but are figures of good practice laid out by practical mill men, showing the real depreciation of machinery and equipment. Therefore, to allow this money that has been made by the mill to lie idle or melt away is to purposely allow the mill to slip backwards.



Courtesy, Hermas Machine Co.

A modernly equipped southern cloth room

The mill situation today can be summarized very briefly as follows: The number of spindles still in place are needed for normal production. The code is attempting with much success to balance the supply and demand. The average mill today under present conditions can be operated at a minimum of breaking even, including depreciation. The average mill of today can bring itself to conditions of effective Maintenance and Modernization through the depreciation account. A modern mill of today can be operated at a profit. The most economical program for a mill is a logical and systematic replacement in the order of urgency and the return for money spent. With this program the future of the mill should be sound.

Modern Dyeing and Finishing Methods and Maintenance

By Donald M. Byrnes

A MAN with evident knowledge of the field sets down here some of the recent machinery developments in dyeing, bleaching and finishing equipment—and describes also the development of the range. He gives as well some thoroughly practical ideas on maintenance of equipment in plants of this type . . . . . .

IN discussing the subject of modernization in dyeing, bleaching and finishing plants, it is to be borne in mind that modernization has usually been accepted by plant owners as meaning greater production, while it truly means better production as well.

In the old days of bleaching, dyeing and finishing, each machine engaged in the work was a unit in itself, and each operation was carried on singly. This of course meant handling and trucking, which caused losses at both ends of the batch through dirt, wrinkles and improper processing. The seconds (second quality production) caused amounted to from 10 to 12 per cent, and executives seemed to take this as a matter of course. In after years, as competition became keener, the plant owners began to look around to find places to effect savings, and the number of seconds being so high naturally excited their interests first. Ways and means were then discussed to eliminate a greater portion of the damages.

The Development of the "Range"

One of the earlier results was the placing of two machines in range, so that two operations could be carried on simultaneously with only one handling. The savings caused by this arrangement were immediately apparent, so much so that steps were taken to further increase the range operation, with the result that the machinery in modern bleacheries is arranged so that many operations can be carried on in range.

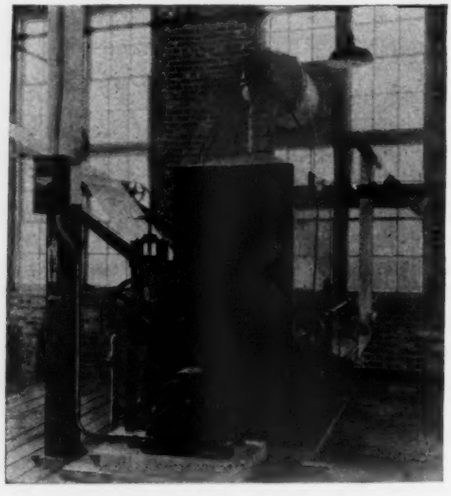
At first glance, this would appear to represent largely increased production, and while this result is secured, the saving is not alone in this direction, for, because, because of the range machinery arrangement, the seconds in many plants have been reduced down to below two per cent, and in some instances this figure is considered high.

It is the writer's idea that the first consideration in a modern plant should be quality, whether the line of goods processed is low grade or high grade—the effort should be toward making the product the best of its kind. The modern bleachery pays attention to cleanliness of the plant, cleanliness of the help, properly maintained equipment, properly ventilated work rooms, elimination of careless handling, and to discrepancies in the finish or make-up of the merchandise.

In the modern plant of today, we find the tendency toward continuous handling growing more and more in practice. As a result, we find plant lay-outs remarkably different from those existing in the early days. Let us go, for instance, to a modern plant, starting out from the gray room where the goods are sewn up and laid out in kierload lots. The kier is charged and boiled in the usual manner, and from this time on, the operation through the bleach house is continuous; the goods passing from the kier into a washing machine—from this machine to the chemic treatment, and from the chemic treatment into a series of piling machines, allowing time for the bleach.

From the last of these piling machines, the goods go into a second washing process. From this washing machine, into the sour process, down through one piling machine, and from this piling machine continuously through a third washing machine.

Thus, we have moved continuously and the bleach is now finished. The speed of this equipment has been 250 yards per minute, and the attention of approximately three men is all that has been necessary to carry on the complete operation. This, today, would be called a modern bleach house.



Courtesy, Textile Finishing Machinery Co.

Modern 2-burner gas singer, equipped with two Kemp compression type burners

We will now take the goods from the white bin and straight through the open finishing process. The goods are lifted from the white bin and passed through a scutcher, and thence directly into a water mangle.

They pass through the water mangle and are partially dried over cylinders. They go directly from here into a starch mangle, and again directly into a tentering machine. From this machine over a cooling system, then dampened and wound up in range.

We find, at the end of this range, that the goods are stretched out, mangled, partially dried, starched, tentered, cooled, dampened and wound up. This has been done in continuous range, and the attention of three men is all that has been necessary to handle this process, and the goods are now ready for calendering.

The next operation, of course, would be the calender, which is the end of the finish as far as bleaching is concerned. This of course does not include the dyeing operation which would naturally come in between the water mangle and the starch mangle. The processes and character of dyeing dictate whether the goods will be dyed in continuous range or otherwise. I might say here, however, that the improvements in dyeing are well in keeping with the improvements in finishing.

Courtesy, H. W. Butterworth & Sons Co.

Kier room and wetting out machine in a modern bleach house . . . . . .

So far, no mention has been made of the singe room. All goods that are bleached or dyed or finished are not necessarily singed. This is particularly true of bag goods which are practically always run in range. Where singeing is necessary, the singe room is placed at a point adjacent to the gray room, and the goods, after being brought from the gray room, are pulled through the singe, after which they are wet out, and go directly from this point to the kier.

During late years the process of singeing has undergone many changes. We have passed from the period of the old coal fire, through the process of plate singeing, and onward through the revolving plate singe, up to the modern high-pressure gas-burning machine. While most goods today are singed through the high pressure method, it is difficult to eliminate entirely the plate singeing because of the fact that this character of singeing is necessary on some types of cloth.

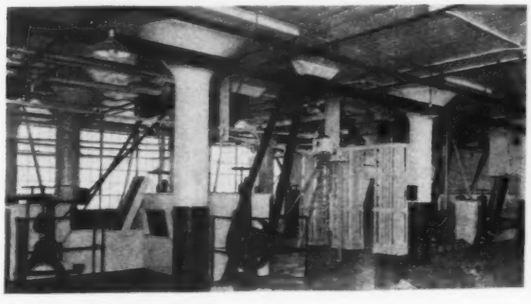
The speed of singeing has improved with the methods, the high pressure type today running as high as 300 yards of goods per minute. Sometimes it is necessary on account of the different speeds of machinery through a plant, to regulate the speed of the singe to the speed of the next succeeding machine; while at other times the goods are singed and laid down in bins and allowed to steep for a number of hours, after which they are drawn up through the first washing machine and processed as heretofore noted.

The ranges, as described briefly, make for high production, high quality, low seconds, cleanliness, accuracy of width and uniformity of process, which, as has been mentioned, give greater production and better quality, which tend to make any character of goods the best of its kind.

There is no difficulty encountered in erecting machinery in range because of the fact that the modern electrical equipment takes care of the compensation between the different machines so that they automatically change speeds to suit any character of fabric being processed.

The danger of breakdowns caused by bad sewing has been found to be much less in range equipment than in single units. The speed of a finishing equipment such as we have mentioned is approximately 100 yards per minute, this, of course, being dependent on the weight and width of the goods being processed. The different types of calendering make it impossible to set any one particular standard for this work, but up to the point of calendering, practically all cotton fabrics may be processed as described.

It will readily be seen that the upkeep of machinery in range is much less difficult than that of the same machinery in isolated units. The chief reason for this probably is that the maintenance of each range is generally a responsibility of the foreman.



Courtesy, H. W. Butterworth & Sons Co.

Continuous washing, chemicing and souring in modern bleach house . . . . .

When considering the higher speeds at which machinery of the present operates, it must be understood that these speeds would be impossible if it were not for the improvements in manufacture, both in workmanship and of material.

In former years, as mentioned, the singeing machine was slowly developing, and the higher speeds of today are possible through the use of better gas carburetion, improved means of mixing, and equipment with high duty rolls mounted in roller and ball bearings.

Whereas the old kier was simply a vomit system, there is now available controlled circulation, resulting in a boil in from eight to ten hours; in former years it required from 18 to 24 hours, and, sometimes on some goods, two boils were required.

In the bleach house, the old type of so-called log washing machine was in many instances cumbersome, and while more or less high speeds were used, they

were used at the expense of the machine and extremely high upkeep. Today, machines with rubber-covered rolls and roller bearings will run smoothly at 300 to 350 yards per minute without apparent unreasonable wear.

The scutcher of today is mounted in rigging frames built of structural steel, completely equipped with roll and ball bearings, and is a smoothly operating unit that may be operated at greater speed and safety. Water mangles are being equipped with roller bearings and with heavy duty rolls where pressures that could not be thought of in former years may be used safely; greater speeds are attainable with safety through improvement in roll manufacture. The housings of these machines are designed heavier, and the whole equipment will withstand rugged treatment.

Finishing and tentering units are being equipped throughout with ball and roller bearings, with devices for adjusting the machine width, etc., are built more rugged, at speeds up to 125 yards per minute compared with 35 to 45 yards in the old days; circulating systems designed to carry off the maximum amount of moisture contribute to the speed.

Calendering, of course, is a finishing operation with many angles. Bag cloths and the lighter fabrics are to be processed light; and permanently finished cloths, such as coat linings, shade cloths, etc., much heavier. Then there are shirtings, sheetings, etc., all of which have their identity and must be finished accordingly. Calenders are available which cover a wide range of work, and a manufacturer having production enough for only one calender may secure many finishes from one machine. Calenders are being equipped for the most part with roller bearings, including lead-in-rolls, breasting rolls, chasing rolls, delivery rolls, etc. Calenders are equipped to run with lever or heavy duty hydraulic pressure, and at temperatures up to boiler pressure.

In late years, the demand for pre-shrunk cotton cloth for the garment manufacturing trade has been increasing, and this demand led to the development of the Sanforizing machine—without doubt the greatest addition to bleaching and finishing equipment for many years. We are enabled to bleach and finish the finest qualities of cloth, and, after this has been done, pass it through the Sanforizing machine and secure the exact amount of shrinkage desired in both warp and filling.

Maintenance of Machinery

Much may be written regarding the lubrication of machinery, but this maintenance job today is much less troublesome than in former years when the oil can was the chief instrument of lubrication. Practically all textile finishing machinery is equipped with modern ball or roller bearings, and these require much less attention than the old type friction bearing. Certainly this work must be done at regular intervals, but the intervals are much longer than in the old days when the lubricating was done two or three times daily, whereas today it may be carried on at intervals as far apart as monthly, and in some cases even longer than this.

Proper adjustments of all machinery are always important and highly necessary. If an adjustment is improperly made, the lubrication is of little use. An improperly adjusted bearing will readily overheat in spite of any amount of lubrication applied to it. The problem of adjustments has been more or less solved by the installation of departmental mechanics, known in mill parlance as "fixers". It has been found highly profitable to have such a man in each department where adjustments and lubrication warrant it, as the time saved more than takes care of the extra expense. This man may be held directly responsible for the proper functioning of all machinery in his department, and if it should so happen that difficulties should arise which are beyond his ability or mechanical knowledge, he of course should make his report to the proper man, who in turn takes the matter up immediately with the mechanical superintendent.

Let us now discuss specifically some typical problems of lubrication and maintenance. Depreciation of machinery does not occur without warning, but is a process covering days, months or even years. When we notice that production is falling off, either in quantity or in quality, we can look for neglect in maintenance. Maintenance in this case will mean the upkeep of a machine in condition at all times to render 100 per cent service or as near that as is possible.

Courtesy, Textile Finishing Machinery Co.

Atomizing type sprinkler, with guider and winder; for dampening goods . . . .

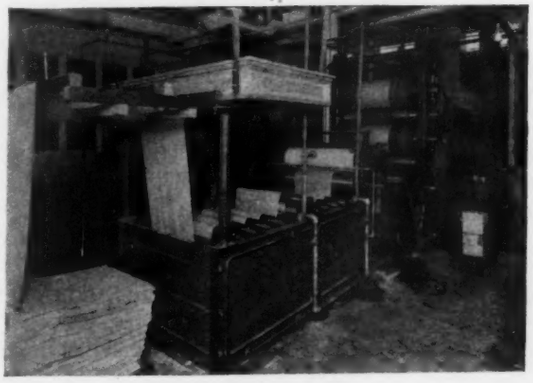
When we say "lubricate" we do not mean to find the first available oil can and oil the part of the machine equipped for the purpose of lubrication. This does not always remedy the trouble. First, the oil hole or oil receptacle may be clogged with dirt, or the oil container underneath the bearing cap may be clogged, so that the simple insertion of oil into the oil hole does not mean that it reaches the bearing.

The writer has in mind a problem which came to light sometime ago, when there was trouble encountered with one side of a machine, but was unaccountably absent from the other side of the machine. Placed in a position in front of and above this particular machine, was an oil receptacle on each side which was capable of carrying approximately three gallons of lubricating oil which was supposedly fed to each side of the machine through an automatic oiling device.

During investigation of the case, we found that one side of the machine was apparently without lubri-

cation, while the other side seems to be thoroughly well oiled, and the difficulty which was encountered by the operator happened to be in the unlubricated side of the machine. Further investigation developed that one of the containers which was supposed to be the oil font for the unlubricated side was not only empty, but more than half filled with cotton linters and fly from the room. Someone had removed the cover from the oil container, and after having allowed the container to become absolutely empty, the oil was never replenished, while on the other side of the machine, the container was in thoroughly good condition and still half filled with lubricant.

A maintenance man's job would have been to see that these two containers were kept thoroughly clean, properly filled with lubricant and in perfect working



Courtesy, H. W. Butterworth & Sons Co.

Modern unit for washing, mangling and drying; equipped with ball and roller bearings

condition. In this one case, the firm in question could have been saved $3500.00, which was the amount spent to put the troublesome side of the machine into proper working condition.

The question of lubrication is one which calls many times for the services of a lubricating engineer. In deciding the manner and means of proper lubrication, we must consider the speed of the bearings, the temperature of the room in which the bearings operate, and the material of which they are constructed, so that when we say "lubricate" we mean lubrication under the direction of a maintenance man who is thoroughly conversant with the conditions. Poor maintenance has caused no end of annoyance, expense and delayed deliveries, coupled with a low quality of work, which after all is the most serious disturbance.

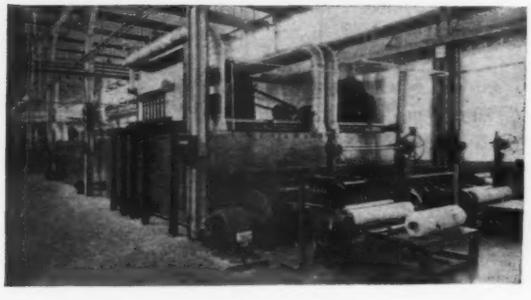
When improper temperatures are applied to calenders, as an example, this one feature can create trouble without end. A calender may be too cold for the operation being performed. Again it may be too hot, and between these two points, the finish of a fabric can change continually throughout a running period. For instance, let us start a hydraulic chasing calender in the morning, say, at 8 o'clock, when the temperature has not been brought to the proper point, and take the goods from this machine continually during a four-hour run. It is estimated that the calender during the first hour would produce a result which would be entirely unsatisfactory. During the next two-hour period there would be a decided change in the finish, and during the last hour still another change. This is accounted for by the fact that the calender at different temperatures produces entirely different results. Again a maintenance man should be on the job.

If a calender should be run at a temperature of 350 degrees F., it should be run at this temperature every minute of its running time. This of course is accomplished by having the steam pressure properly gauged and properly regulated at the machine, and of course it is the duty of the maintenance department to see that this is carried out. Here the question of maintenance may easily be one of great importance.

If gas is used for heating, the same controls of course would apply. It must be understood also that in gas heating, the danger of over-heating is far greater than in steam heat.

In a calender where the rolls are not properly lubricated, either the top or bottom roll will have a tendency to lag. It will very readily be seen that this will have an immediate effect upon the goods. It is not always, however, lubrication in the calender bearings that causes conditions of this character.

Very often where the goods in a calender seem to lag back, making what is known as calender creases



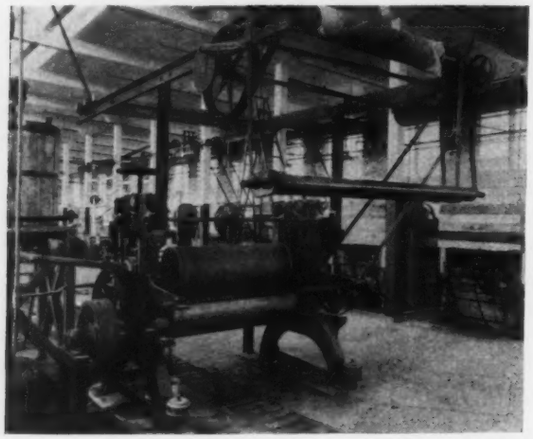
Courtesy, H. W. Butterworth & Sons Co.

Delivery end of range showing tenter and enclosure and automatic cut-off winder

or wrinkles, it will be found that starches or softening materials have been forced from the goods through heat and pressure, and have formed a film on the surface of the pressed rolls of the machine, and, this film being of a more or less viscous nature, causes slippage, which in a calender is always detrimental to the finish. When this condition is encountered the calender rolls of course should be thoroughly cleaned and thoroughly dried, and again put into service.

Very often, in going through a bleaching, dyeing, and finishing plant, the writer has noticed a small part of a machine which has been broken during operation, and temporarily replaced with a makeshift part, probably bent into shape by a blacksmith or by the operator, making a temporary repair in order to get through the day's work. There can be no objection to this except that due to the fact that in some cases this makeshift arrangement appears to work so well that it is left on the machine indefinitely, finally causing serious damage which results in great expense. Here again the question of maintenance arises when we recognize the fact that if the part had been immediately ordered and replaced properly, there would have been a saving instead of an expense.

Conditions surrounding the operation of bleach house machinery generally are poor, that is, atmospheric conditions in the finishing plant and particularly in the dyeing and bleaching departments are particularly humid, thus inducing rust, and if the machinery is not properly cared for, this will result in serious expenditures. Machinery should be properly



Courtesy, Textile Finishing Machinery Co.

Two-roll dye padder with rubber-covered rolls mounted in roller bearings . . .

cleaned at least weekly, and as much oftener as circumstances will permit.

In handling calender rolls, it should be noted that the rolls should at all times be resting fully on the fabrics to be processed. If the rolls are riding on the ends toward the head, then the calendering is imperfect. Many calenders are operated when this condition is a fact. For instance, the writer had a call recently to a converting house, where the clients were cutters, and they complained that as they laid the goods out on the cutting table, they were inclined to be tight on one selvage, and extremely loose and baggy on the other selvage. It occurred to us immediately that one selvage, being baggy, must of necessity be longer than the other selvage, and in order to get this extra length, some machine in the plant must be rolling this selvage out much longer than the other one. Upon investigation it was found that the calender through which these goods were processed was equipped with five rolls, two of which were pressed rolls, and one of the chilled iron rolls was riding hard on one end of the pressed roll, and daylight could be seen through the other end. It will be seen then that one side of the calender was rolling the selvage out longer than the other side, thus making a long and short selvage. When these rolls were taken from the calender, and properly turned in a lathe and replaced, the trouble entirely disappeared. Here again is shown where proper maintenance would have taken care of the condition, which caused no end of loss, annoyance and seconds.

Many troubles in a plant are made serious by unintentional neglect, and this neglect is in a great measure due to the fact that while the operator may be thoroughly acquainted with the processing of fabrics, he is not sufficiently versed in mechanics to recognize the danger signals when they appear. When the warning signals begin to fly, he, being a layman, does not recognize them as being serious, where a maintenance inspector or mechanical superintendent would immediately recognize them as such, and stop the machinery until proper repairs and adjustments have been made. Many times it is simply a case of adjustment, while at other times it may be foreign matter from the plant having found its way into a vital part of the machine. If precautions are taken at the proper time, many thousands of dollars which are now being spent for new equipment, parts, etc., would be saved to the stockholders of the company.

In setting forth these suggestions, I do not mean to imply that there are no maintenance men, or that the maintenance men do not attend to their duties, but am simply trying to show the maintenance department something that will give them some hints as to what to look for under certain conditions—with a view to being helpful to the mechanical and manufacturing departments of plants generally.

M. I. T. Offers Special Textile Research Course for Mill Men

The Massachusetts Institute of Technology is again offering a special course in textile research intended for textile executives, research directors, laboratory technicians and others interested in this field beginning March 2, 1934. To insure efficient use of the laboratory facilities the size of the group will be strictly limited. Registrations will be accepted in the order of their receipt up to twenty.

The work is arranged to afford lecture and laboratory exercises on Friday and Saturday each week for six consecutive weeks. Thus it is possible for men in the industry to attend conveniently. Twelve lectures will be devoted to textile analysis and will include discussions of the character and necessity for textile testing; the design of textile testing laboratories; bone dry tests; conditioning apparatus; correction for moisture; yarn analysis; twist and thread counting devices; corkscrew in plied yarns; auxiliary apparatus; textile testing machines. special tensile testing machines; and the measurement of special properties of fabrics.

Twelve lectures will be devoted to textile microscopy and will include discussion of textile microscopes and how to use them; light and the microscope; specimen mounting; theory of textile micrometry; applications of textile micrometry; rapid and precision sectioning; color as it applies to textile microscopy; micrography of textiles; photomicrography of textiles; micro-analysis of fabrics; micro-analysis of yarns; and micro- analysis of fibers. The lectures will be illustrated with slides, motion pictures and experiments.

In addition to the laboratory work performed by members of the class, opportunity will be afforded for conferences, etc.

Labor, Too, Has a Definite Interest in Modernization

OLD mass-production mill machinery, worn and suffering from the infirmities and maladjustments of abuse and old age, demands far more labor by the operative and fixer than comparable modern machinery on the same amount and kind of goods. And not only does old machinery require more labor itself, but it makes for more labor in subsequent processes. The whole evil story of the old frame with its ends breaking down is not told with the excess labor required to tend it and to try to keep it fixed, but, continued in spooler, warper and loom stoppages, is re-told again and again in the cloth room and the finishing processes. The mill equipped with obsolete machinery, regardless of other policies in effect, can compete only by employing excessive and, therefore, cheap labor. You will usually find that kind of people running that kind of machinery.

But the mill equipped with modern machinery, if it is to reap the full return on its additional investment, in the first place, must take full advantage of the equipment, to reduce the labor cost per unit of product and hence to reduce the number of employees on the pay-roll. In the second place, the mill so equipped, if it is to reap a full return on the new investment, must have the type of employees who appreciate efficient equipment and will so preserve it. And, in the third place, the mill so equipped can attract and hold the type of employees who, natively superior mentally and physically, are competent to be thus trained to make their labor adequate to the tending and maintaining of more units of efficient machinery. Finally, this type of employee on this type of machinery commands more wages because he makes more profits for the mill. You will always find that kind of people running that kind of machinery.

Courtesy, Whitin Machine Works

Long draft roving—only one fly frame process in this card room

Thus made economically possible by the improved mechanical equipment of the last several years, and stimulated by the obvious beneficent effects upon profits and the morale of a higher wage scale, and in turn necessitated by this higher wage scale, there have come into the cotton mills all sorts of labor efficiency or extension practices. These vary all the way from the most humanely scientific formulas for prescribing, rewarding and extracting a profit from an honest day's work, down through good old cotton mill horse sense, on down to wage-and-dividend-consuming engineering bush-wah and the most obtuse manifestations of human exploitation.

Now then, in the years preceding the incoming of the Code, while the modernly equipped and well conditioned mills were holding their places in the struggle for existence by fewer people on the payroll and getting more and more production for a more or less decent day's pay, the obsolete and poorly conditioned mills could compete only by holding excessive numbers on the payrolls and cutting and cutting the day's pay until there seemed to be no bottom to the prices at which such mills would take orders nor to the wages they would offer and unfortunate humanity be forced to accept.

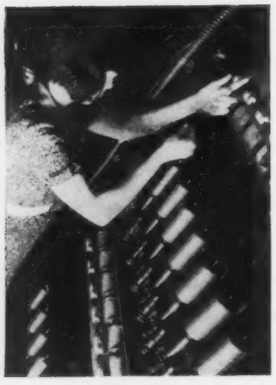
But the Code not only put a bottom to wages, it raised the wages of the necessarily excessive and inefficient labor in the poorly conditioned mill up to the wages of the efficient labor, with full jobs, in the well equipped competing mill.

The moral is inevitable and perfectly obvious: barring conditions, such as another world war, when nobody would care for the cost, and delivery be the only consideration, the Cotton Textile Code has written on the wall of the obsolete mill for owner and employer to ponder: "Modernize and run full jobs, or shut down and starve."

Somebody will immediately rise up and say, "But I understand that stretching out after July 1st is a violation, if not of the Code, certainly of the spirit of the National Recovery Act, designed to put more people to work, not to put them out of work." And the economic-social theorist may add his argument that in the present state of so-called over-production it will be better for the nation's business and the national wage scale thus to return to the soil which gave them, these obsolete, marginal mills.

One would give weight to their opinions if the NRA devotee and the economic theorist would first stand amid the village children, mothers and fathers, and the stockholders of the obsolete mill, and answer this question: "What would be most in keeping with the spirit of the Recovery Act, and which would promote the best interest of my country: spending some money for rehabilitating the buildings, replacing and over-hauling the equipment, thereby creating work for this mills' own mechanics and the machinery builders' employees, and thus saving the jobs for perhaps seven out of ten of these helpless folks, so that they can help support the three who lose out; or junking this investment, perhaps wiping out the sole incomes and life-time savings of some of the stockholders, and throwing all these helpless people, at best, upon public relief, and almost certainly, to physical and spiritual degradation?"

Modernization and Maintenance IN RAYON WEAVING PLANTS



Twisting . . . .

Re-drawing . . .

By Phil A. Ment

THIS article gives in detail a picture of what represents modern equipment and modern methods throughout the processes of a mill weaving rayon into fabrics. This new division of the textile industry has made rapid strides in efficient operation and quality product. The author has been associated with rayon utilization since its inception . .

THE past decade covers one of the most amazing developments in the history of textiles. By this statement reference is made to the rapid rise of the rayon fibers. Starting from viscous masses in laboratory test tubes, viewed with skepticism and even humor by the old-line cloth manufacturers, with the then present machinery for conversion generally unsuitable, these synthetic strands plodded on into mills and minds; proving their worth, and at the same time creating entirely new fabric fields of their own. Mill men were forced to discard old practices and learn new ones. Machinery had to be altered or replaced with new. An ever-changing program was set up, necessitating extreme alertness at every point of contact between the mills and the yarn producers.

Co-incident with the many developments in manufacturing and converting these fibers was the extensive program of education that most certainly succeeded in making the buying public extremely rayon-conscious. Through various advertising and sales mediums, Mr. and Mrs. John R. Consumer have been made to realize that the synthetic textiles were not merely substitute articles, but also a class of goods possessing beauty, character and wearing properties of their own.

Since this discussion is to be directed toward the men who turn the yarns into woven cloth, remarks from now on will be confined to the more technical aspects of this new cloth era. Starting from the package of yarn as it comes from the rayon producing plant into the mill, an attempt will be made to trace the various steps in modernizing both yarns and machinery, recalling from memory those outstanding features that have made it possible for even average mills to incorporate these new fibers into their organizations.

Photos, this page, courtesy, Atwood Machine Co.

Winding . . . .

The earlier forms of yarn package still prevail, in modified and improved forms. Viscose yarns are put up today, as originally, in much the same manner as real silk; that is, bundles of skeins, weighing usually ten pounds. Cones, originally prepared for knitting machines, developed into supply packages for copping machines, and also into widespread use in magazine cone creels. Tubes, pirns, spools and cops, popular forms of the past, are not now in such general demand. Sized warps, from yarn manufacturers or highly specialized commission warping houses, were at first the only means weavers possessed in getting their looms covered.

Acetate yarns made their appearance in each of these forms; but quickly confined themselves to spools or tubes for warp yarns. The skein form never became popular with this group. Cloth manufacturers, of course, found a boon in this, as a winding operation was saved. However, the early spools caused no little annoyance, as will be mentioned later. Filling yarns on cops are still in popular demand, due to the increasing use of the smaller silk type shuttle. The magazine cone creel again influences yarn packages, and we find acetate fibers put up on cones; each cone neatly wrapped, labeled and boxed individually.

The original shipping spools were crude metal affairs, designed more for economical purposes than for adapta-

bility by the cloth manufacturer. The bore was of varying size, rough and irregular; and this early package caused many headaches to processors. Now-a-days, well formed, substantial spools, of dimensions selected for the denier, are sent out by the yarn manufacturers; and these spools give practically no trouble to the mills.

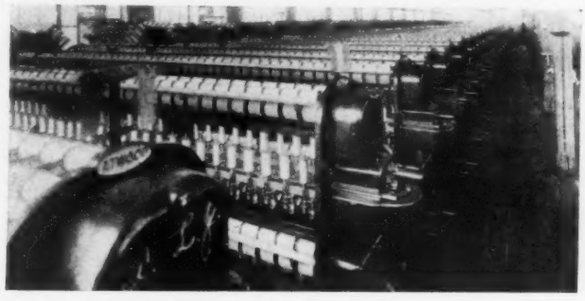
Very few mills today order in their yarns, sized, on loom beams. Mill men quickly learned, through size manufacturers and machinery builders, how to use the machinery at hand; or else invested in modern sizing machines. Weavers, as a rule, are prone to do their own sizing; as this keeps an important weaving factor continually under their control.

The Mill Processes

Winding and Twisting

The silk manufacturers using rayon were not greatly concerned, originally, with as many difficulties at the winding stage of the operation as were their competitors possessing cotton equipment only. Rayon skeins necessitated a handling of practically the same type as that given real silk, except for a few very necessary differences. Silk skeins could be run under damper room conditions and with more variable tensions than could rayon skeins. Due to the rather severe boil-off given real silk, dirt and oil were not considered as being so dangerous.

In running rayon skeins, manufacturers soon learned that room conditions had to be kept constantly at a not too high percentage of relative humidity, tensions had to be kept low and uniform, and the yarns had to be handled almost "with kid gloves" in order to maintain a clean product at all times.



Courtesy, Atwood Machine Co.

A southern installation of rayon twisting . . .

Rayon, possessing good extensible properties, but elasticities not comparable with real silk, could not be stretched and still be expected to retain its original weaving and dyeing properties.

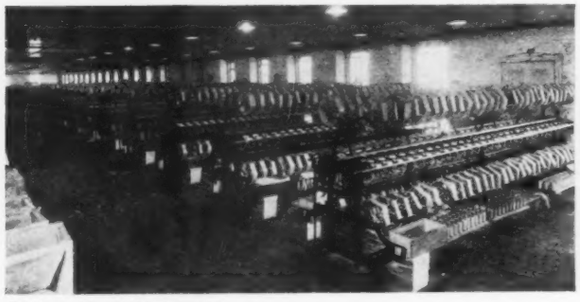
Manufacturers of winding and twisting machinery were quick in recognizing these facts and developed winder frames with smoother traverse motions, oilless or splash proof bearings, easier running spindles, and every possible feature that allowed of simplicity in operation. The factors of cleanliness and tension were given full consideration, and the results of the activities in these lines are to be found in the latest type frames.

One very valuable type frame to any rayon plant is the re-draw machine. These machines are adaptable for both over-end and unrolling delivery. With the over-end delivery an excess of stock on cops may be skeined or spooled for subsequent throwing or warping operations. Piece spools may be condensed at low cost, due to the high speeds these frames may be operated on over-end delivery.

While the standard cotton twisters were suitable enough for the low twists required in some rayon fabrics, they were not generally successful in twisting the crepe yarns. As a result, the more modern up-twister made its appearance.

This machine offers a beautifully running spindle synchronized with the take-up roll in such a manner that loss of twist is avoided. Bearings are oilless or housed to prevent soiling the yarn. Traverse motions are smooth in action.

Modern up-twisters come in double or single deck types; offering a saving in floor space, if desired; or



Courtesy, Atwood Machine Co.

Rayon winders in a southern mill . . . . .

additional chances of perfectly clean yarn if floor space is at hand. The spindle speeds of these machines run approximately 25 per cent higher than the ring twisters of the older type; effecting thereby a considerable gain in unit production. Rings are not used on the up-twister, and this difference contributes largely in obtaining a perfectly clean product.

In choosing spools for use with rayon, good judgment must be exercised. The finer deniers must of course be run on small spools, and the heavier deniers on spools correspondingly larger. However, there is a possibility of carrying this too far and wasting some effort. The present-day rayons are vastly improved over those of a few years back, and are capable of standing a little more rigorous treatment. The finer deniers may be put up on larger packages than formerly. The accompanying scale of spool sizes with respect to possible deniers may be interesting.

Denier	Spool Dimensions
45-50	3″ length x 2½″ head
60	3″ length x 2½″ head
75	3″ length x 3 ″ head
100	4″ length x 3½″ head
150	4″ length x 3½″ head
200	4″ length x 4 ″ head
300	4″ length x 4 ″ head

It is to be understood that the spools used are to be well balanced, true running, and as light as the required strength will permit. Also, the subsequent use is understood to be in warper creels or as supply packages for copping.

In the early days it was learned that outside weather conditions played more havoc within a winder room, unbeknown to the casual eye, than any other single element. The early history of rayon goods manufacture is filled with numerous cases of warp and filling streaks in many and varied forms, generally traceable to changes in outside conditions uncontrollable within the winder room itself. The modern winding departments are, today, not considered complete unless capable of maintaining a reasonable atmosphere at all hours. This is accomplished by up-to-date humidifying systems actuated by sensitive controls, and the necessary investment is more than well spent.

A word or two regarding swifts. While the wooden frame swift is satisfactory enough, the later all-metal, expanding type is neater, safer to use, and far handier than the older, clumsier model. In the metal swift, aside from these advantages, the cross bands are dispensed with; as the cross piece is a part of the arms or pins, and remains in a fixed circumferential position. The usual swift cross band is a cotton loop, and tends to stretch, sag or slip out of position, thereby giving a jerky or galloping motion to the swift. For maintaining an even tension, the unwinding movement should be uniform.

The fragile filaments of the rayon strand are easily broken, causing "skin-backs" later in the loom; with the result of a broken end, or, worse yet, a "shiner" or tight end. Consequently, if the wooden swift is used, the pins must be kept smooth, and the spool heads must be free from any nick or projection that will catch the yarn.

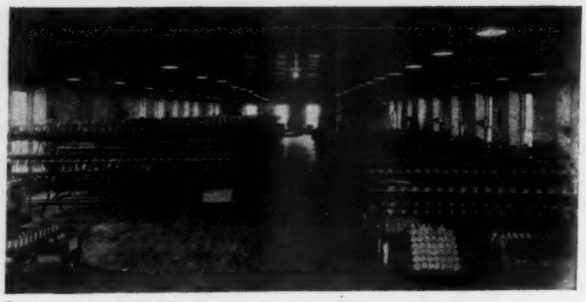
Copping

Rayon has been responsible for many improvements in cops and cop winders. While the old wooden quills, and regular quilling machines, were suitable enough for the heavier deniers of low filament count, they were too harsh in action for the finer deniered and multi-filament yarns. The amount and uniformity of tension being a factor of prime importance, it is only natural that the first improvements should have been made along these lines. Wheels were substituted for the porcelain guides on compensator wires, as one of the first steps. On unrolling attachments the compensators were co-ordinated with the friction elements in such a manner that the friction exerted on the unrolling body became dependent upon the pull of the compensator, and vice versa. Usually, spools are speared upon a flanged gudgeon which is turned down at both ends to offer the smallest possible bearing surface. A narrow flat cotton band passes partly around the gudgeon flange and connects through a relief spring to the compensator wire. As the unwinding package becomes smaller, its speed is increased with resulting increased friction on the cotton band. The pull from this friction is imparted to the compensator wire, which gives in proportion and relieves the tension. The amount of friction from the start of a full supply package to the empty stage is thus kept fairly well in equilibrium and does not increase enough to bring about any serious condition.

There are still other more improved but further complicated unrolling attachments with yarn guides of various types and refinements, full description of which would be rather lengthy here. A letter to the manufacturers of copping machinery will bring clearer and more detailed accounts than we have space to give.

On over-end supply packages, the familiar "washboard" type is very good, although methods of passing the yarn around rolling bodies and then onto a cop is very widely used.

Regarding the quills or cops, there has been little change except a steady departure from the old cotton type cone base and sliding feeler base quills to the smaller silk cops. Although a large filling package is to be desired, for reasons of cost, the smaller cop gives a lighter, smoother flow of yarn, and also permits using a small silk shuttle that requires less shed opening at the loom.



Courtesy, Atwood Machine Co.

A group of winders and re-draw machines . .

Paper cops are made with smooth bases for use with sliding feelers, with metal bases for use with electrical feelers, and also come impregnated with heat-resisting substances that allow of steaming after copping.

Wooden cops, coated with heat-resistant enamel, are also available.

Available also are case-hardened discs for cop-forming. Such a disc resists small cuts or nicks from operators' scissors, knives, etc. It is surprising to discover how much injury can be done the yarn by a small cut on the rim of a forming disc.

Warping

Silk mills had a distinct advantage over the rest of the industry in warping rayons. Years of experience on horizontal warpers proved of great aid in handling the new yarns. The early rayon yarns offered problems not readily overcome on cotton systems, particularly with respect to the acetates.

The horizontal warping system offers the advantage of an end-and-end lease, thereby delivering an evenly laid warp to the drawing-in department. This is of particular advantage on high sley warps, as the cotton system is incapable of allowing a perfect end-and-end dressing, being forced to depend upon striking combs or gummed paper tape for the warp arrangement.

When warping and slashing rayon on cotton machinery became an accepted practice, the silk system found itself faced with the problem of cost.

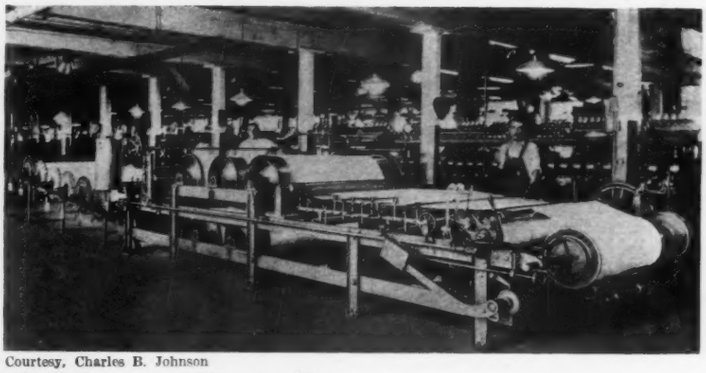
Very recently, however, enterprising manufacturers are putting in magazine cone creels behind horizontal warpers, and speeding the warpers to better than 300 yards per minute. Electric stop motions on creel and warper allow the warper operator more freedom for helping out in the creeling or in some other fashion. This new set-up tends to bring silk warping costs more in line with a cotton system, and in addition delivers a straighter warp to the loom.

On the other hand, when using the cotton system, the high speed magazine creel may be set up to serve a section beam warper, and also increase production tremendously.

Some mills on the cotton system still use the old style warping frame with no changes except a covering of felt on the driving drum. Others have substituted electric stop motions for the old drop blocks, and perhaps added an extra guide roll or so. Electric stop motions placed on the creel uprights close to the spool are generally preferable to those riding the yarn at the warper front, since considerable machine threading after a stop is eliminated.

Courtesy, Cocker Machine & Foundry Co.

Warping rayon at high speed . . .



Courtesy, Charles B. Johnson

A modern rayon sizing machine . . . . . .

The high speed magazine creel and warper combination is perhaps the greatest single step forward in the warping process. Its advantages are obvious, and more efficient variations in use are cropping up continually. One creel may be used to serve two or more horizontal warpers mounted on movable platforms, thus obtaining a near-continuous performance.

Sizing

Sizing, a very important stage of rayon processing, has been a source of many disappointments and heart-aches. In the early days, when size manufacturers were groping along with the mills in an effort to prepare warps of good weaving quality, there was some excuse for failures. But with modern machines and size preparations of sensible components, there is no reason why satisfactory results cannot be obtained.

Whatever were the elements that went to make up some of the original sizing preparations is very much of a mystery, and will very likely remain so. Ordinary cow's milk would have served as well as some of the first-used solutions. More unadulterated hokum was handed out than one could record. Outrageous prices were paid for pastes that were largely water, or for near-worthless dusts. Today, there are a number of highly worthwhile mixtures on the market, some of them suitable for practically any type of rayon.

It is extremely difficult to discuss size preparations without stepping on toes or running into an endorsement, so the subject will be left hanging, and the sizing machine taken up instead.

Since the cotton system of warping and slashing is in such wide and successful use on rayon, it is only natural that a refined type single drum machine makes its appearance. In this machine are incorporated nearly all the ideas worked out with an ordinary cotton slasher as a starter. Ball bearings on the beam creel, rolls, and such moving parts, a single quetsch roll set well close to the cylinder—this machine lacks only an end-and-end leasing arrangement to complete the picture.

The three- and five-drum rayon sizers are quite familiar. These machines are available for sizing single warps made by the silk method, wherein the end-and-end lease is to be kept; and also with beam creels in back and split rods in front for use with the cotton system. A late five-drum machine of this latter type offers tension control at every point of likely stretch; which is of paramount advantage on any type rayon, making it possible to slash a warp with practically zero stretch.

One of the most useful of the lately developed attachments for slashers is the automatic temperature control system, now appearing in several different types, but all serving the same ends. Positive control of size box and cylinder temperatures is absolutely necessary to perfect processing, whether the control is effected by hand or mechanical means. It should be obvious to the reader that a practically fool-proof means of controlling penetration of size, drying heat, and the amount of moisture left in the warps should be very desirable.

Weaving

To attempt a recapitulation of all the improvements in looms, with even a short description of each development, and in so doing cover even the last few years, would take more space than we are allotted. So this part of the resume will have to be rather sketchy.

The silk loom, as it is generally known, was found to be the most adaptable for rayon, but not quite good enough in every particular. Loom builders awoke to this fact and developed several attachments that seem to be serving their purpose very

nicely. The automatic let-off, controlling warp tension at all times, is an outstanding feature. Automatic shuttle change, without the loss of even one pick, appears to be successful. Electric stop motions, functioning on warp and filling, are superior to those operating mechanically.

The modern rayon loom is more of a precision machine than any of its predecessors. Loom parts are more carefully machined, gear trains are more carefully cut, ball or roller bearings replace box bear-

Courtesy, Burlington Mills

A Burlington Mills weave room . . . .

ings on motions that contribute shock and vibration to the action. Safety devices in the form of loose reeds, super-sensitive protectors, and center stop motions, protect the warp from bad smashes, slams and mispicks.

HARNESS AND REEDS. In the line of modern loom harness may be found several points of improvement. The silk finish harness eye should be well known by now. Harness frames with movable rib hooks allow an even spacing of the warp ends with comparative ease. One great step forward is the development of the oval wire reed. This reed beats up the filling with considerably less friction than the straight wire reed, thereby lessening warp streakiness to some extent.

With the stringent demands placed upon rayon goods manufacturers today, it does not seem likely

Courtesy, Burlington Mills

Another Burlington Mills interior . . .

that mills equipped with only the older style weaving machinery will be able to compete properly. The present-day buyer desires quality at a price, and it looks like a hard pull for the manufacturer who is not up to the minute in equipment.

Unconsciously, rayon has had an uplifting effect upon a class of people most certainly deserving of every permanent betterment. Reference is made to textile people in general, the operatives in particular. Wages are higher, usually, in rayon plants; and this benefit has been extended to numbers of plants formerly limited to cotton only.

Social Effect

Along with the increased pay envelopes comes a refining influence that cannot help being absorbed. Rayon requires skill of handling in an atmosphere of cleanliness. People forced into contact with an improved condition cannot help but become somewhat improved themselves. It's a natural reaction, and one most certainly gratifying to all connected with the textile industry.

Maintenance of Machinery

It would not be possible to lay down a set of hard and fast rules covering a method of machinery maintenance. So many variables enter into such an undertaking that it could only be approached by having at hand a compilation of a number of practices; the more the better.

Still, it would do no harm to leave the reader with a thought along these lines. Any piece of equipment may be kept in the peak of condition by systematic inspection and repair. It matters not who makes the inspections, so they are made at the

Courtesy, Burlington Mills

Some of Burlington Mills' 4,326 looms . .

scheduled time and made with judgment and impartiality. Any type of guide card, printed form or such may be used; as long as the pertinent points are plainly shown.

Following the inspection, comes the repair. Repairs, replacements, or changes must be made as soon as possible following the inspection. In time, systematic inspection and repair will reduce upkeep to a minimum of labor and expense. The system has been tried and proven; which, it appears, is the proof of the pudding.

There are many points untouched, not from choice, but from lack of allotted space. So much has been done with rayon in the last few years that a great percentage of the development has passed outside the scope of the writer's activities. An effort has been made to recall, on short notice, those phases that stand out most prominently. It is hoped the summation has been interesting.

OVERHAULING, as an Important Part of the Maintenance Program

By Fred M. Mitchell

THIS is one of the most useful practical articles we have published. It contains good sound common-sense on the subject of overhauling mill machinery—which will interest both the office executive and the practical man. The author, a working mill operating executive himself, then sets down in detail some of the items to be followed in overhauling, in each department of the mill. Read the article and see if you don't agree.

PRACTICALLY every mill has a crew of men who are supposed to devote their entire time to the upkeep or overhauling of the machinery. In many mills these men are utilized for a portion (and probably too often a larger portion) of their time on other work, with resultant neglect of the overhauling.

There is no standard system of overhauling in any mill department, but the superintendent of each mill, or the overseer of each department, as the case may be, has his own ideas on the subject, oftentimes with the result that the overhauling in some of the other departments does not get the attention or supervision that is given to the department in which the particular man "came up" as overseer.

It is probably a conservative statement to say that there are comparatively few mills which really get what they pay for out of their overhauling payrolls.

One of the main reasons for this is that, except in the larger plants, the overhauling is supposed to be looked after by the overseer, and he is usually allowed a foreman-overhauler, who is paid a little more per week than the section men, but is still in the class of section man.

The average overseer or superintendent, when asked for example when spindles should be plumbed, will answer, "once a year", or "once in so many months". If the inquiry is carried further into detail, as to what is a year at his plant (that is, how many spindle hours*); what is his speed; what type of spindle; what kind of oil is used and how often; etc.—you will find that his statement was based on his own judgment, on what is customary at other mills, etc. You will realize that his statements were not based on *definite* knowledge.

Now, the condition of a beater blade on a picker has a definite bearing on the quality of cleaning which the cotton receives in the process of picking. Ask one hundred men who are responsible for the condition of the beater blades in their mills two such simple questions as

"Do your beater blades need sharpening?"

or

"When were your beater blades sharpened?"

—and I am quite confident that you could not get absolutely definite answers from three of them, unless you happened to strike three out of the hundred who had recently had the work done. I have never found any machine or any piece of mechanism, it matters not how high a state of precision by which it is manufactured, but what has either vibration or friction. Anything which has vibration or friction has a definite life.

It is a simple matter to determine just how many machine hours a picker beater or any part of any machine will function efficiently; or the machine hours for which it will operate before a chance is taken with its doing defective work.

The mechanical life of a picker beater will, of course, not be the same at all mills, on account of the many different conditions locally, such as beats per inch, revolutions per minute, amount of foreign matter in the cotton, the distance it is set from the feed roll, the size or thickness of lap, system of opening the cotton before reaching the beater, and numerous other local conditions. This very fact shows the fallacy of a statement from any man that "beaters should be sharpened every three months" or every three years, etc. He simply does not know.

If a thoroughly practical man should overhaul the beaters in several mills and make a record of the dates of this overhauling, and then have the local men in charge of each mill keep an accurate record of the hours operated, and start a weekly or monthly inspection of those beaters and continue this inspection until the beaters in each of the several mills did need overhauling, the conclusion is so simple that any further reasoning seems unnecessary.

Such a system could be applied to all of the essential parts of the machinery.

A simple system of maintenance records can be easily made a part of the daily program of any superintendent or overseer. Such a plan will provide the overseer with a record of when any job—such as sharpening beater blades, or any item of maintenance, cleaning, etc.—was done, and will act as an automatic reminder of when to do that particular job again.

A system like this can be devised through the

(*) With the new operating schedules of 40 hours single shift and 80 hours double shift per week imposed by the NRA Code, this matter of basing the length of service between overhauling machinery upon spindle hours, rather than upon days or weeks or months, assumes particular importance. For instance, if in a mill that has for years run a single shift of 55 hours, we will say, it has been the custom to take down and clean or overhaul a certain machine every six months, is it not logical to figure that if this machine is now operating 80 hours per calendar week, that it should be taken down and cleaned or over-hauled more frequently?

use of a looseleaf note-book, or preferably, a 3x5-inch card index file. The overseer merely makes out a card for each task, and, every time the task is performed, he enters on that card the date it was done; so that eventually he will be able to determine, for any particular item, the period of time between overhauling, etc., and thus establish a regular and systematic procedure.

The same card index file can be used also for recording inspections made by the overseer or others. Too many operating executives fail to give their personal attention to important items of inspection. They say they haven't time—which would of course be true if a man tried to personally see every moving part on every machine in a department in one day, or one week.

It is a very simple matter, however, to establish a program of personal inspection by the department head or superintendent, analyzing the job and making out a card for each inspection—like Beater Blades Inspected—then actually make an occasional personal inspection of this item on a given number of machines, writing on the card the numbers of the machines inspected for that particular thing on that particular date, and, the next time, starting with the next machine in order, etc.

Such a book or card reference system is likewise of great value in keeping records on the life, cost per thousand loom hours or spindle hours, etc., of any supplies, parts, etc. When a test on, say, a new belt, is to be carried out, or when two or more competitive belts are to be tested against one another, a note as to the prices, the dates they went on and the dates they came off, etc., will provide the information necessary to make a fair, accurate comparison intelligently.

Too many operating executives have no such systematic records of (1) When machines should be overhauled; (2) when inspections have been made and when and how often they should be made; (3) accurate information on the life (in spindle hours or loom hours) of supplies and equipment; and (4) any systematic, orderly means of recording and determining when a particular job—like filling the fire water buckets, as a simple example—was done.

It is entirely practical—and is being done with profit by the operating executives in some mills—to lay out the individual duties of any job, in an orderly manner, and develop a card index file which will show when and how often each duty should be performed, and prove a "check" for the man and his superior that it was properly and promptly done, and serve as an accurate record on the life of any piece of equipment or supply.

With that preamble, we shall now proceed with a discussion of some of the items of overhauling of the machines in each process of a mill.

The Card Room

Pickers

Calender rolls and bearings should be taken out and cleaned. Foreign matter gradually accumulates on them, causing the rolls to jump or vibrate and resulting in worn gears, uneven work and more power. Leather linings, or picker screens, should be trimmed or replaced with new ones to avoid good cotton going to waste. If the linings are allowing air to pass the deposit of cotton on the screen will not be regular; that is, more cotton will be deposited in one square foot on the screen than in another square foot.

Foreign matter accumulates in the gearing which drives the draw and feed rolls, causing vibration and uneven mechanical draft. The fluted draw and feed rolls accumulate foreign matter in proportion to the amount of foreign matter in the stock. A definite system of inspection would show when these rolls begin to do bad work.

After the grid bars are once set to take out the motes, as determined for the particular stock and local conditions, they should be periodically inspected and gauged for correct setting, so they will continue to do good work.

Worn beater blades should be put through a planer to restore the original beating edge or surface. This surface can then be restored two or three times by draw-filing with a special tool to hold the file in an accurate plane, providing the beater blades are not allowed to become too dull before this draw filing is done.

A record of the date when the blades were planed and a system of inspection will soon determine the number of machine hours they will operate, at that particular plant, before beginning to do bad work.

Cards

The grinders do more of what might be termed overhauling on cards than section men do in the spinning or weaving department. However, where an overhauling crew has charge of the card room machinery, the overhauler can be used as a check on the grinders' work and thereby obtain much more efficient work from the grinders.

For example, the grinder is supposed to take out cylinder and licker-in screens periodically to be cleaned with graphite (stove polish) of all foreign accumulations which will allow a smooth passage for cotton and air. If this work, which is only necessary about once per year, is done jointly by an overhauling foreman and the grinders, it will insure against neglect on the part of the grinder.

There are mills which have been in operation for years without having had the card trumpets gauged. Trumpets do not wear the same on all cards.

Worn trumpets do not condense the sliver properly. Card sliver insufficiently condensed will break back on the drawing. We have found that a trumpet of No. 14-gauge or ⅛-inch bore on 50-grain sliver will stand wearing to about No. 19-gauge or 3/16-inch before showing much change in the sliver. But with a No. 24-gauge or ¼-inch bore the sliver will go 5 to 7 per cent heavier, causing much uneven work.

Trumpets are one item that grinders do not have any way of repairing when worn, therefore, in overhauling they should be tested with a standard gauge which is suitable for the weight of sliver and length of staple being used.

Drawing

Drawing frames should be checked periodically for level, in two ways: the calender and bottom steel rolls taken out, bearings inspected for wear, stands lined and tested for settings. Check the meshing of high speed gears to prevent back lash.

Trumpets gauged with a standard gauge, distance from bite of calender roll to bottom of trumpet set to a standard gauge for staple of cotton being run. Although this setting is very important, a check-up among a large number of mills a few years ago showed that only two mills had ever gauged this setting and a large majority of the men questioned

did not know what the setting was. Gauges for this purpose may now be obtained from machinery builders at a very nominal price.

Stop motion spoons should be restored to their original shape. The knife on which the stop motion spoons rest should have its working edge restored to original. The wearing of this knife prevents quick action of the spoons, resulting in uneven weight in the drawing sliver.

If the coiler can table is out of level with the coiler head, the high end will allow the drawing in the can to push the tube gear out of mesh; resulting in excessive wear. A periodical check on this setting will save much bad work and many supplies.

Fly Frames

Flyers that are out of balance set up vibration which is detrimental to practically every moving part of the frame. It requires an experienced mechanic to balance flyers. When flyers are balanced, worn pins should be replaced, presser fingers should be blocked to the original shape, the worn part of the flyer leg which carries the presser should be built up with a welding machine, flyer slots should be restored to a standard gauge, spindle and bobbin gears should be properly meshed, and spindles reversed or re-topped where necessary. Top and bottom rolls should all (each one) be checked to a standard gauge. Machinery builders now have these gauges for sale at a nominal figure.

The bobbins and spindles are driven from two separate and distinct trains of gears. The spindle gear is a constant drive, the bobbin is a variable drive. If the gearing of either or both of these drives is worn or improperly meshed, the surface speed of the bobbin will be out of the proper relation to the speed of the flyer presser at each time the frame is stopped or started, resulting in weak places in the roving.

This is one of the most important items in the operation of a fly frame, and no one—machinery builder or practical man—I have ever questioned can say how long or how many machine hours a frame will run before this condition begins to develop and to do bad work. The system of determining this condition should be carried out as previously explained in connection with beater blades, etc.

After leveling the fly frame, it is often found that the bobbin carriage is not level with the frame and this will oftentimes result in slippage of the cone belt, uneven tension and tangled bobbins.

The upkeep of these items requires a higher class mechanic than is usually found in charge of overhauling machinery at a comparatively small plant.

Spinning Room

When the average mill is overhauling the spinning frames, they send the steel rolls which need refluting to a commercial machine shop which is equipped with a re-fluting machine. After the firm puts the steel rolls through the re-fluting machine, they then put the rolls through a process of honing and polishing. This combined process will usually reduce the diameter of the steel rolls slightly. Oftentimes where spinners and section men have been allowed to carelessly cut thread laps off of the rolls, thereby nicking and marking the rolls, the shop doing the repair work will further reduce the diameter of the rolls in their effort to "work out" these defects. We have found as much as 25/1000-inch variation in the diameter of steel rolls.

(Note: The common belief that the flutes of steel rolls will wear down very much is not based on facts. Micrometer tests on steel flutes which have been running against leather top rolls for twenty years would be surprising. Even steel flutes running against steel flutes, such as in drawing frames, will show no appreciable wear for years. It is a fact that the drafting edge of the flutes will become rounded and that is why re-fluting, where the shop is equipped to restore the roll to its original diameter, is beneficial.)

It is apparent, then, that a mill having this work done will in a few years have quite a variation in the diameter of their steel rolls; not only from frame to frame, but in sections of the steel rolls on the same frame. (There are 14 sections of steel roll to a 224-spindle, 2¾-inch gauge frame.)

This is one explanation of the wide variation of yarn numbers in some mills. The writer was once called to inspect a spinning room of about 20,000 spindles where the roller covering bill was higher than that of another spinning room of 35,000 spindles, operated by the same management. The rolls were fluting the leather top rolls so badly that the cots would not last half the time they should. They had changed the diameter of the top rolls by using a different thickness of wool cloth and had tried many other things, all to no avail.

A micrometer reading revealed not only a wide variation in the diameter of sections of the rolls, but the shop doing the repair work had made an attempt to raise the flutes to the original diameter and in doing so had greatly reduced the cross-section of the flute, thereby leaving less flute surface for the leather top roll to rest on, and this caused the leather covering to be cut and fluted excessively.

Re-necking Steel Rolls. The average size mill is not equipped to re-neck rolls, and this is one of the largest items of cost in the upkeep of a spinning frame. Commercial shops charge from 65 cents to one dollar per joint. For case-hardened work, this would amount to about $25.00 per frame. The gear ends need replacing on practically all rolls which are taken out for overhauling, and these cost $1.25 each or $2.50 per frame.

An average mechanic could do this work, with the proper equipment, at a substantial saving to the mill.

Roll Stands. As the roll necks and stands do not wear the same, all stands must be aligned with a special tool made for the purpose. Otherwise, when the rolls are put back in the frame, the high stands will cause excessive wear on the new roll necks. Or, if necks are case-hardened, the high stands will wear. This is quite a simple operation providing equipment of the proper tools is supplied.

Rings. Periodically the rings should be examined for wear and those which are found to be badly worn should be nicked on the worn side and turned over. This will prevent this side of the ring from being put back into use for any reason. A supply of rings should be kept on hand so that all of the rings on a frame may be changed at one time, because a turned or new ring will require a lighter weight of traveler, and to allow the section men to promiscuously turn the rings will soon get a room in such a condition that it will be necessary to regulate the twist to "favor" the few ends on the frame which will not stay up.

Section men should be furnished old rings for use as supplies. A frame of rings may be taken off at one time for this purpose and the section men instructed to use the old side of the ring.

Leveling and Alignment. There are so many methods and ideas concerning the proper alignment of frames that it is difficult to set down an arbitrary practice. One method starts with the aligning of the base or spindle rail, crosswise; next, level the frame lengthwise from the roller beam, then level the roller beam crosswise. Level ring rails both lengthwise and crosswise. Ring rails must be leveled from the support stands on the top of the lifting rods, independent from and after the leveling of the spinning frame.

Spindles. Methods of plumbing spindles differ somewhat. One method may be described as follows:

In preparing for spindle plumbing, all bolsters are adjusted to a standard, and worn bolsters re-

placed. The spindles are taken out, and straightened, and any which need it are re-pointed. When the spindles are replaced they are now ready for plumbing.

The lifting rods and bushings on new frames will usually show wear in 12 to 18 months, and in the average mill which has been in operation for several years, the rods and bushings are worn enough to put the spindles out of center in the ring at certain points during the traverse. Lifting rods are expensive, and many mills which cannot have them made in their shops, are simply compelled to do the best they can with worn rods.

With the ring rail at the top of the spindle, the spindles are placed in the center of the ring. Then the rail is lowered to a position for plumbing at the lower part of the traverse. If the ring rail is not lowered below the worn place on the lifting rod, then the spindles will not be plumb throughout the traverse. As it is more convenient for the plumber to work with the ring rail high, they will have the ring rail two or three inches above the base of the bobbin if this is permitted. If spindles are plumbed with the rail in this position, the spindle will not be in the center of the ring when the traverse goes to the extreme bottom.

From this, it will be apparent that when plumbing spindles the ring rail should be placed at the *extreme* top and then at the *extreme* bottom, and, strange to say, it is difficult to get plumbers, either commercial shop men or local men, to observe and follow these instructions.

Next, the guide wires are adjusted by aligning the back of the guide wire to the center point of the guide set. If the management of the average mill realized that when guide wires are out of plumb with the spindle an uneven pull is produced on the traveler—this uneven pull of the traveler causing excessive wear on the rings—the cost of re-setting guide wires as soon as they need setting would be more than off-set by the cost of rings, and at the same time result in less ends down and more production.

Spooling and Warping

As the old style spooling and warping is fast being replaced, we will not dwell on the overhauling of these machines except to say that probably no process in the mill is so badly neglected. It seems to be taken for granted that there is nothing much to get out of order about spoolers or warpers and that they need very little attention. We have records which show a reduction of over 50 per cent in warper stops per beam as a result of inexpensive overhauling on spools and skewers.

Looms

Just how or why mill executives have fallen into the custom of considering that the upkeep of carding and spinning machinery is necessary but do not consider weaving in the same class, I do not know. Probably one explanation is that there are more parts to the machines in carding and spinning with which they are familiar. Probably the carding and spinning machinery salesmen have solicited them more than the weaving machinery salesmen. At any rate, we believe that proper overhauling of looms will result in more dollars saved per dollar spent in overhauling than on many of the overhauling items in carding and spinning.

In their effort to lower operating cost, many mills have given loom fixers more looms to take care of and a warp hand to tie on the warps and relieve him of other duties. Then, with night work, which places two men in charge of each section, the fixers do not seem to have the same attitude as formerly toward their work.

Race Plates. Worn race plates result in excessive wear on shuttles. By preventing the proper boxing of the shuttle, many looms are caused to bang off and break frogs, bend or break protection rods, box plates, filling motion slides and other parts. In other words, a loom with a badly worn race plate will take much more upkeep and lose more production by being out of fix than a loom with the race plate in this condition.

To install a race plate, the mechanic must be equipped with square gauges and a straight edge. He must be competent to use these tools in a way so that when the race plate is installed it will restore the loom to its original condition as when it was turned out by the loom builders. The average loom fixer is neither equipped nor competent to do this work.

Rocker-Shafts and Rocker-Shaft Boxes. There has probably been a wider difference of opinion in regard to rocker-shafts and rocker-shaft boxes than with reference to any other part of a loom.

A badly worn rocker-shaft or rocker-shaft bearing will cause much defective cloth; therefore, there should be some definite system of determining when these repairs should be made. The usual procedure is to depend upon section men to keep these parts in order as best they can. The result is that many mills wake up to the fact that the parts all need replacing at once, and then a crew is put on and the work is rushed. When all shafts and boxes have been replaced the matter is promptly forgotten again until an increase in percentage of seconds or something brings the matter before the management again.

Warp Stop Motions. As the warp stop motions are supposed to be taken care of by the section men, only an inspection to see that they are set properly to do good work will suffice.

Batteries. Many mills allow fixers to install batteries in the same way that they (fixers) would install a shuttle or any other part. Batteries should be installed by the use of special gauges such as those the loom builders use, which can be secured from them.

Let-offs. Let-offs are badly neglected in most mills. The section men, of course, keep them repaired but do not look after the general up-keep so long as they can make them run. For example, the Draper loom has an arrangement which automatically adjusts itself to compensate for the difference in speed required by the let-off gear as the warp runs out. This and other motions or parts of the let-off can be operated by the fixer even if they are worn so badly that the face or appearance of the cloth is affected.

Take-ups. On the proper setting and condition of the take-up depends largely the percentage of thin places and the smoothness of the cloth. We do not know of any make of loom which has even a fairly good arrangement for lubricating the take-up roll bearings. Several years ago, we made an effort to interest the loom builders in equipping not only the take-up rolls but several other bearings on the looms with the pressure system of lubrication. All of this is said to show the importance of some system or record which would show when these bearings need attention.

If a mill changes from 80 pick goods to 40 pick goods, the seconds on the 40 pick goods would be excessively high until the take-up was regulated to the new conditions. One of the items usually found necessary is to dismantle the take-up roll and bearings.

We have seen bearings so tight on the gudgeon that they could not be driven off with a hammer. Take-up roll bearings must go back on the loom they came off of, as each bearing (on all old looms) has been specially fitted to the frame of that loom and we have never seen the fixer who could fit new bearings to the old loom successfully.

Then and Now--an Interpretive Review of the Industry's Altered Picture

By Dunhill Marsden

THE actual facts of the changed conditions in the industry, resulting from the principles of the NRA, are well established. Though necessarily recounting these facts, this writer presents with them a broad-gauge interpretation and comparison which provides the textile reader with a comprehensive analysis of the altered order of things, and furnishes a record of these developments . . . . . .

A MAN whose work keeps him in intimate touch with textile developments remarked recently that so many things had happened in this industry during the year 1933, it seemed as though he had lived a lifetime during that period.

As the industry gets well into the new calendar year, it should be helpful to reflect upon the conditions in this industry now as compared with the situation prior to the year just passed. For 1933 truly brought into being so many fundamental and significant changes in the set-up and conditions in this industry that it would have been amazing, even had they come to pass over a century of time instead of within the brief compass of a year.

Fundamentals of thinking, industrial relationships, social and economic philosophy have been materially changed throughout our entire industrial structure; and the cotton textile industry has been no exception. In fact, it has perhaps made greater progress along these lines than almost any other industry.

A Reminder of Former Conditions

Although, as is well known, the various collective agencies of the industry had for years been working untiringly and intelligently in an effort to eradicate some of the industry's many evils, which were intensified in large measure by narrow individual vision and tendencies, 1933 ushered in for the industry a dark and foreboding year.

Some of the shadows were uncontrolled production, cut throat competition, irregular operation of plants, inadequate wages, a sufficient sprinkling of child labor to give to the general public a sense of social injustice, suspicion among individual members of the industry, unorganized, unsystematic and tangled selling methods indicating unethical trade practices; in many cases a loss of hope, dangerously depleted capital, a threat of radical legislation, a breaking down of the financial system—and many other destructive spectres.

It is unnecessary to elaborate, for the textile reader, upon any of these conditions. They are too conspicuous in our memories; the scars of their ravages are still tender; the utter foolishness of some of the thinking which permitted these conditions is too unintelligent to review, except with humility, honesty and regret.

It is unfair, however, to charge every one in the industry with a lack of foresight, or a lack of an intelligent social and industrial viewpoint. The manufacturers comprising the textile industry may be divided into three parts or groups. First, the progressive, intelligent business statesmen who, through the years, foresaw the impending doom and proclaimed it and offered remedial measures. Second, the group who believed and perhaps still believe that rugged individualism, or the law of the jungle, is still the only infallible law, and who, having based their thinking and their actions on this premise, refused to listen to progressive ideas of co-operative action. Then, between these two groups, there was another, who might have been termed advocates of expediency, who were looking to the leaders of progressive thought, hoping they could suggest something, and yet looking backward at the ultra-conservatives, think that perhaps they were right.

In the early part of 1933, these three conflicting classes had been unable to agree. Then, on July 17, under the direction of Code No. 1, and acting under the authority of the National Industrial Recovery Act, the entire textile industry of the United States declared itself free from the destructive traditions of the past, and accepted as its constitution and by-laws a new philosophy of co-operative effort, of industrial understanding, and of social progress. This edict was formulated by a body of twenty men selected from the industry at large, acting in conjunction with representatives of labor, the public and the national government. Without attempting to go into any of the details of this code, or the amendments which have subsequently been added, it will be interesting to record some of the conditions under which the industry goes into 1934 and the long future.

Instead of mills in various sections and localities being able to operate their plants to a maximum of 144 hours per week, flooding the market with goods, and working their labor from 48 to 60 hours per week, with thousands idle, the new constitution says that productive machinery, regardless of location, can be operated only to a maximum of 80 hours per week, and that the labor working in these mills, with certain exceptions, can work only 40 hours per week. These two provisions are of tremendous value because they give to the worker a week of employment

consistent with the spirit and scientific progress of the age, and put a check on uncontrolled production.

The time of the worker has been limited not only to his benefit, but it has also greatly increased employment because in this industry practically 150,000 additional workers have been employed. The 80-hour work week for productive machinery has given an equitable distribution for the employment of machinery already in place, has prevented an uncontrolled production, and has also carried with it, according to recent interpretations and developments, provision for further temporary curtailment, either industry wide or by groups, as is deemed necessary to keep production and demand in the proper relationship.

In other words, these progressive rules have made it possible to more nearly give to the mills regular operating time and to the employees regular employment. These two situations have created a fine response in the minds and thinking of both employers and employees. Not only have the maximum hours of work for employees been set up, but minimum wage scales have been established, below which no employer may pay. These wage schedules have been somewhat in keeping with the social demands of thousands who work in the mills. This has prevented indiscriminate wage cutting and social injustice which in many cases were not willfully committed, but unwillingly so because of the existing industrial and competitive conditions.

Wages, Wage Differentials—and Child Labor

There have been certain general regulations with reference to wage differentials above the minimum wages. Taken by and large, this is one of the most progressive steps undertaken by the industry in its existence, and while it was thought by some to be drastic, yet after six months of trial, there are very few manufacturers if any who would have these provisions removed.

There has always existed a public opinion that the cotton textile manufacturers were great employers of child labor. It may have been true in the past century, or in the early years of this century, but improved machinery and social and industrial progress have made vast changes in this respect, so that in the early part of 1933 there were only a few hundred children under 16 years of age in the cotton mills, and these were being rapidly eliminated.

If the real story of these children under 16 years of age could have been placed before the public—as to why they were there—it would be found that they were not there at the suggestion, demand or desire of the manufacturer, but because of some economic condition of the child or of the family from which the child came. All of these who were employed were working under the strict regular regulations of the labor laws of the state. However, to meet social demands and to relieve the manufacturer of any onus that might be upon him in public opinion, and also in order that Code No. 1 might be a pattern for other codes to follow, the cotton textile manufacturers of their own accord wrote: "On and after the effective date employers in the cotton textile industry shall not employ any minor under the age of 16 years."

The conditions so far discussed relate largely to the welfare of labor, and the fact that these have not been merely statements but have been principles of action is attested by the statement of prominent administrative authorities to the effect that the cotton textile industry has made the most outstanding social and industrial contribution of any industry in the nation, and it is further attested by the statement made by the various national and state representatives who have had immediate supervision of these regulations.

Not only have the hours of work and the wages of labor been set up, but there is also created, under the government, machinery for investigating the machine load carried by workers, so if there should happen to be, knowingly or unknowingly, on the part of any over ambitious manufacturer, a desire to overload any employee, this matter may be promptly handled. Regulations have also been set up for those workers who are physically and mentally deficient. In fact, every known precaution, with present information, has been set up to make for social and industrial progress of the worker.

At the present there is perhaps less unrest, greater satisfaction, more happiness and more confidence in the social and economic life of the average textile employee than there has been in the development of the industry.

In order that the government may assure itself of the good faith of the manufacturers in complying with these various provisions, a series of reports is regularly made, which are compiled for information and study. Not only are reports of this type made for the government, but reports of machine hour operation, production by construction, and other various kinds of statistics are compiled for the benefit of the various groups of the industry, and the industry is studying from day to day stocks on hand, sales, possible demand, and are therefore acting more intelligently in manufacturing schedules.

Limitation of Machine Installations—What It Means

A further purpose of the new conditions in the industry, as exemplified by certain paragraphs of the Code in keeping with the provisions of the National Industrial Recovery Act, is the rehabilitation of the industry. Some of the statements already made have indicated certain plans for rehabilitation. Anticipating the fact that under the new principles of operation, improvement is imminent and an established fact, and that with the improvement of conditions in the industry there would naturally be a desire on the part of those already engaged in the industry or outside of it, seeking to make new capital investment by expanding their plants or building new plants, a requirement was written into the code making it necessary for people who may have such a desire to secure the permission of the code authorities before such additions or expansions would be possible.

(Continued on page 119.)

QUALITY
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PROFIT-INSURANCE
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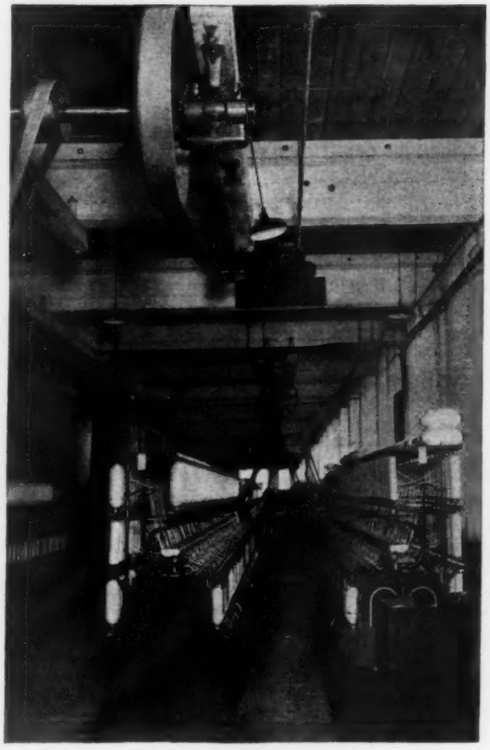


RAW cotton up 66%; spinning and weaving, up 50%—manufacturing profit more than ever depends on lower operating costs.

And to keep down costs, cut down troubles, there is nothing like *quality* equipment, such *mill-proved* equipment, for example, as Goodyear products, built with a knowledge of your problems and their job.

Goodyear COMPASS (Cord) Endless Belt is *the nearest-stretchless* belt built—ideal for your Vertical Openers, Pickers, Lappers and Twisters.

Goodyear THOR Belt, Seamless, is notable for long wear on Cards, Frames, Slubbers, Spoolers, Looms, Splashers and Breakers.

Goodyear Emerald Cord V-Belts are supplied in perfectly matched sets to insure a balanced drive.

Goodyear Air Hose has no equal for clean-up uses.

All Goodyear products are expertly specified to your mill needs by the G.T.M.—Goodyear Technical Man. He will call promptly on your request to Goodyear, Akron, Ohio, or Los Angeles, California, or your nearest Goodyear Mechanical Rubber Goods Distributor.

Goodyear is represented in the South by authorized Goodyear Mechanical Rubber Goods Distributors conveniently located with relation to your mills and able to supply promptly all Goodyear Mechanical Rubber Goods for the textile industry

THE GREATEST NAME IN RUBBER
GOODYEAR TEXTILE BELTING

MADE BY THE MAKERS OF GOODYEAR TIRES

Curtailment Plans, Interpretation and Labor Clause Procedure under NRA

Again we present a chronological record of developments in the administration and operation of the cotton-textile code. The period covered is the month of January, up to the time of this writing during the closing days of the month. This record picks up where the report on page 39 of the December issue left off, to add another chapter to the chronological account. No attempt at interpretation is made, and, in so fast-changing a picture, no pretense is made of prediction of further change, even during the time between the writing and the appearance of this story.—The Editor.

DURING January the textile industries, especially cotton-textiles, continued in the further regimenting of the mills toward more effective operation of the code's various features. This, the sixth full month of operation under the code, saw furthur steps taken toward the more complete organization of the industry into product groups, indicated in the formation of several groups as reported in the January issue. During January several other groups were formed, and committees for them named, and production regulations imposed and specific principles of fair competition, required by group conditions, were planned.

First was the organization of a narrow sheetings sub-committee of the code authority, to consist of:

Robert Amory, Boston, Mass.; D. W. Anderson, Pacolet, S. C.; A. H. Bahnson, Winston-Salem, N. C.; S. Marshall Beattie, Greenville, S. C.; Lanier Branson, Graniteville, S. C.; James Chapman, Jr., Spartanburg, S. C.; Elroy Curtis, New York City; Norman Elsas, Atlanta, Ga.; C. W. Mizell, Opp, Ala.; R. C. Moore, Charlotte, N. C.; Fred W. Symmes, Union, S. C.; and W. J. Vereen, Moultrie, Ga.—with Mr. Beattie as chairman.

Special production and other limitations and provisions applying to the narrow sheetings group would be effected shortly, it was felt following the appointment of the committee.

A wide sheetings sub-committee was also appointed, consisting of the following:

C. A. Cannon, Kannapolis, N. C.; E. T. Gurry, Aurora, Ill.; Ernest N. Hood, Salem, Mass.; K. P. Lewis, Durham, N. C.; J. A. McGregor, Utica, N. Y.; Gerrish H. Milliken, New York; George P. Ray, New York; Elliott Springs, Lancaster, S. C.; and Donald Tansill, New York.

On January 24th, The Cotton-Textile Institute, Inc., agency for the Code Authority, announced a requirement applying to wide sheetings manufacturers, which was signed on January 23rd by National Recovery Administrator Hugh S. Johnson, giving it the same force and effect, applying to wide sheetings manufacturers, as any other provision of the Cotton-Textile Code. This order required that for a period of 12 weeks beginning January 29, 1934, no mill shall operate looms 45 inches or wider for the production of wide sheetings a total number of loom hours in excess of 75 per cent of the total number of loom hours otherwise permissible under the code. The requirement included a provision that "no mill which has not, for a period of 90 days prior to January 5, 1934, operated looms 45 inches or wider for the production of wide sheetings for immediate or ultimate use for bed sheets or pillow cases, shall engage in such operations and such production during the aforementioned period of 12 weeks, beginning January 29, 1934, and ending April 21, 1934." This provision, as was pointed out in connection with a similar one in January COTTON, prohibits what may be termed "floating" spindles or looms originally in other groups from interfering with the curtailment plans for this particular group.

During January the emergency requirement as to limitation of machine hours in the carded yarn group was modified, making the limitation, for a period of four weeks, beginning January 29, and ending February 24, 60 hours a week, instead of 48 hours as provided in the original requirement published in full on page 39, January COTTON. In the modification, spindles producing yarn for eventual use in the manufacture of rubber tires were exempted from curtailment.

Group Curtailments Ordered

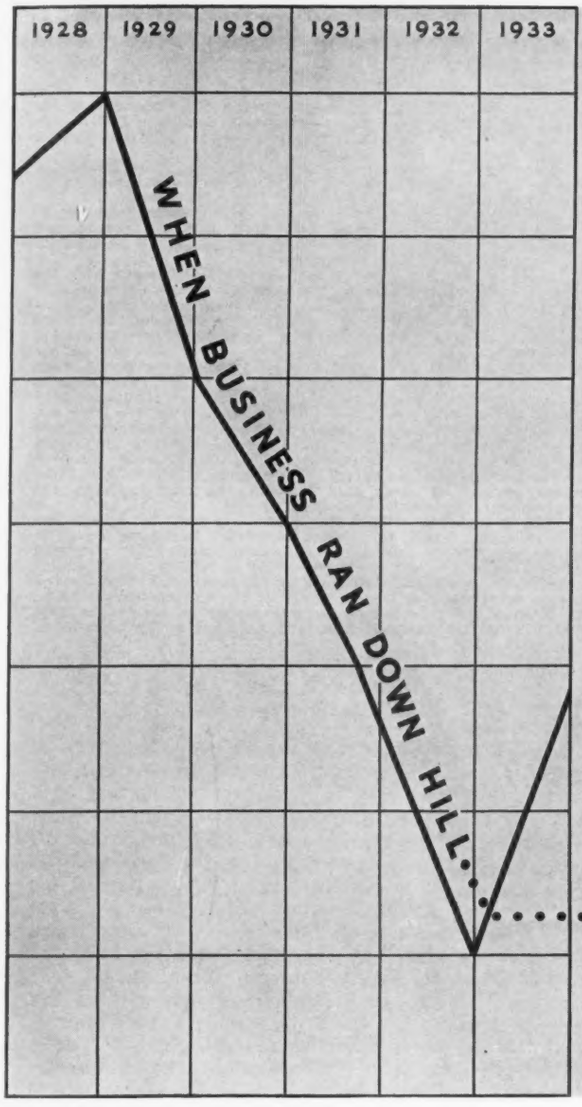
Effective January 15, for a period of seven weeks ending March 3, spinning spindles operating on the production of any type of combed yarn for sale, with the single exception of spindles producing yarn for eventual use in the manufacture of rubber tires, were limited to a production not in excess of 70 per cent of the maximum hours of weekly operation otherwise permissible under the code. The "floating spindle" provision was included, preventing spindles not on combed yarn during the 90 days prior to January 1 from producing this type of yarn during the seven weeks emergency period.

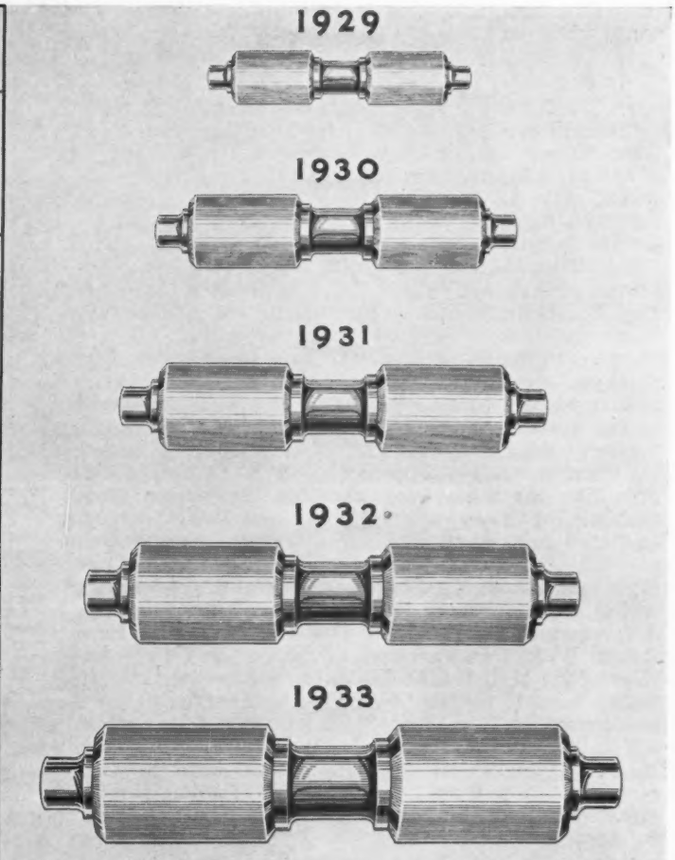
Spinning spindles owned by a mercerizing company, operating on the production of combed yarn for further processing in its own mercerizing establishment, were limited to 75 per cent of 80-hour week operation for a period of seven weeks from January 15. Similar curtailment was applied for the same period to spinning spindles owned by a thread producer, operating on the production of combed yarn to be sold by such thread producer as thread; the "floating spindle" provision being included in the order.

Another order, approved on January 23 by General Johnson, extended through the month of February the reduction from the maximum hours for printing machinery as previously approved for January, and reported on page 40, January COTTON. This limits printing machinery operation to not more than 75 per cent of the maximum 80-hour week, through February.

On page 41 of January COTTON, the text of an amendment to Section II and Section III of the Cotton-Textile Code, providing for a minimum wage for outside employees and cleaners of "not less than 75 per cent of the standard minimum wage hereinabove set forth", and limiting the hours of these workers to 44 hours per week, except in emergency, was published. There was indicated there an uncertainty as to whether the wages for these workers should be computed at 75% of a $12.00 per week minimum, or $9.00 per week worked; or, since a maximum of more than 40 hours per week is allowed in this group, upon the "equivalent" rate of 30 cents per hour worked.

An interpretation made on January 16 by the Cotton Textile Industry Committee, the Code Authority, clarified this to mean "that the minimum wages for cleaners and outside workers shall be at the rate of at least $9 per week in the southern section of the industry and $9.75 in the northern section of the industry for 40 hours work, and that these two classes of workers cannot be employed for longer than 44 hours in any one week." In other words: cleaners and outside workers must be paid at the rate of at





.....ARMSTRONG'S CORK COTS WENT ON 4,595,000 MORE SPINDLES

SUBSTANTIAL savings have been shown by every single mill that has switched to Armstrong's Seamless Cork Cots (60% was the average). That's *one* reason why so many mill operators changed over to cork during the lean years.

If you have been hesitating until the business picture got brighter, we sincerely believe that *now*, more than ever before, is the time to change over. Under the code's higher operating costs, the efficiency and economy of cork become increasingly important.

In addition to savings in roll costs, cork-equipped mills report equal or better quality yarn, reduced clearer waste, and eyebrows practically eliminated. Seamless cork cots run longer between buffings, cut down roll changes, and reduce piecings and slubs in the yarn. Lap-ups are almost unknown. High humidity and hard ends have little effect on cork.

These experiences have been common to mills on all types of work—fine or coarse numbers; white or colored yarns; pure cotton or mixtures with rayon, flax, or wool; regular or long draft systems. Your mill will be no exception. Armstrong Cork & Insulation Company, Textile Division, 923 Arch Street, Lancaster, Pennsylvania.

6,050,000 SPINDLES NOW ON CORK

Armstrong's SEAMLESS CORK COTS

For Spinning and Card Room Rolls

least 22½ cents per hour, or a total of $9.00 for 40 hours work per week and $9.90 for 44 hours per week.

Labor Developments

During January two important and interesting interpretations were made with reference to the intent of and procedure under Section XVII, covering the national, state and mill industrial relations boards for the handling of controversies arising from the specialization (stretch-out) system, or other working condition. When the original Cotton-Textile Code was approved on July 17, Section XV was inserted by President Roosevelt, providing that "until adoption of further provisions of this code that may prove necessary to prevent any improper speeding up of work (stretch-outs), no employee of any mill in the Cotton Textile Industry shall be required to do any work in excess of the practices as to the class of work of such employee prevailing on July 1, 1933, or prior to the share-the-work movement". On August 1, Section XVII, providing machinery for handling complaints from working conditions, was approved, and was construed, as stated on page 40 of January COTTON, as superseding the temporary provisions of Section XV. Since some readers remained, without official interpretation, under the impression that the provisions of Section XV remained in effect, the following statement from Robert W. Bruere, chairman of the Cotton Textile National Industrial Relations Board, was secured, which states in part "Section XV of the Cotton Textile Code as adopted on July 17 has been superseded by Section XVII, approved on August 1. You will note that Section XVII makes no reference to the share-the-work movement or to July 1." Mr. Bruere further pointed out that the report of the stretch-out committee, made to Administrator Johnson on July 21, 1933, from which the boards under Section XVII were created, showed that

> "the committee took account of the stretch-out or specialization system as a reasonable occasion of controversy in mills where it has been abused, and since many workers in their testimonies before the committee alleged that such abuses were a matter of long standing, it was the opinion of the committee that the workers might make the stretch-out subject of consideration under Section XVII, no matter at what time it had been introduced."

In summary, Mr. Bruere stated, "Section XVII supersedes Section XV. If an employee believes that the number of looms he is required to operate is excessive, whether that number was established before or after July 1, he may now make it the subject of consideration under Sub-section 3, Section XVII."

Another point concerning the industrial relations boards provided by Section XVII on which numerous inquiries have been submitted, is with regard to who shall constitute the personnel of the employee committee on the mill industrial relations committee. Herewith is presented, in answer, a copy of TLB—4. giving the procedure approved on January 3, 1934 by the national board, in connection with mill committees. It clearly states that the three representatives of the employees on the industrial relations committee in any cotton textile mill shall be selected from the employees in such mill; and that, on an appeal to a state board, the employees may present the appeal themselves, or elect a superseding committee of three to be selected from employees in the cotton textile industry, whether or not employees in the particular mill. In either case, the committee may retain counsel of their own choosing to help them in the preparation and presentation of their appeal.

The official text of the approved procedure relating to mill committees follows in the next column:

Approved Procedure Under Section XVII of the Cotton Textile Code

MILL COMMITTEE

The following procedure in regard to the establishment of Industrial Relations (Mill) Committees under Section *XVII* of the Cotton Textile Code, has the approval of the Cotton Textile National Industrial Relations Board.

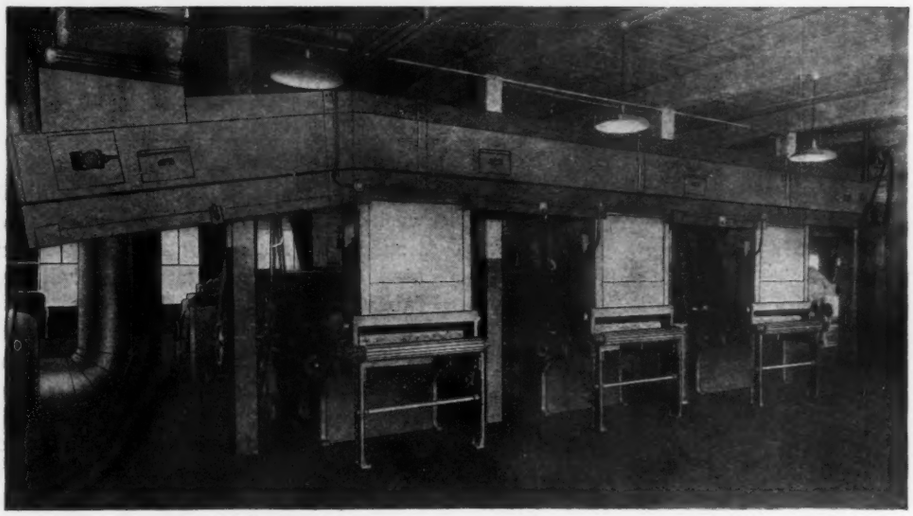
1. Employers or employees may apply to the State Board for assistance in the establishment of mill committees as provided in Section *XVII*, Sub-Section 3 of the Cotton Textile Code.
2. The three representatives of the employees on the Industrial Relations Committee in any cotton textile mill (or in any mill operating under the Cotton Textile Code) shall be selected from the employees in such mill.
3. In the event the representatives of the employer and the employees, composing the Industrial Relations Committee in any cotton textile mills (or in any mill operating under the Cotton Textile Code), as provided by Sub-Section 3, Section *XVII*, are unable to arrive at an agreement with respect to any controversy, and the representatives of the employees decide to take an appeal to the Cotton Textile State Industrial Relations Board, they may, with the consent of the employees by whom they were chosen, present the appeal themselves; or if the employees so desire, they may elect a superseding committee of three to be selected from employees in the cotton textile industry, whether or not employees in the particular mill, to present their case on appeal to the Cotton Textile State Industrial Relations Board. In either case, the committee selected to appear before the State Board shall be entitled to retain counsel of their own choosing to help them in the preparation and presentation of their appeal.
4. The procedure outlined in (2 and 3), shall be equally applicable in cases where the State Industrial Relations Board is unable to bring about agreement and united action of labor and management and present the controversy to the National Industrial Relations Board for hearing and final adjustment in accordance with sub-section 4, Section *XVII* of the Cotton Textile Code.
5. Section *XVII* is not to be interpreted as conflicting with Section *VII* of the National Recovery Act, but as an instrument for its application.

Processing Taxes

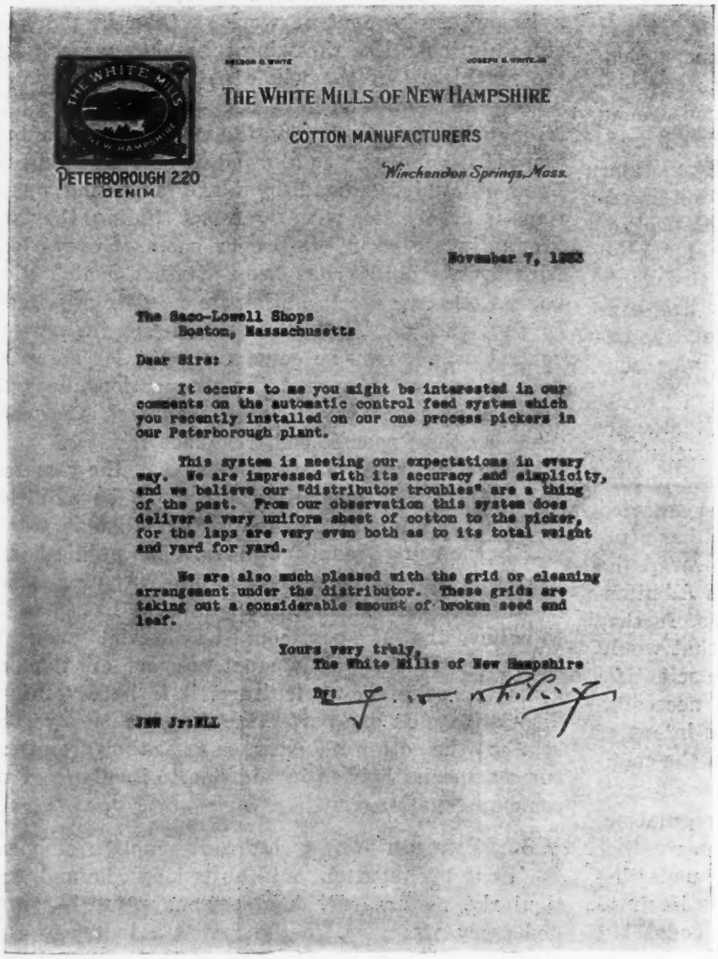
The continuation of the cotton processing tax to be paid by the mills as first domestic processors, continued to levy its heavy toll upon the operating capital of the mills, estimated by a leading cost expert as equalling "more than the combined net profits of the cotton textile industry during the best year it has had since the world war", and "more than twice the amount of money the industry is allowed to include for depreciation on Federal tax returns"; and "six times as much as the cotton textile industry pays for all state, county and municipal taxes."

In addition to the tremendous burden this tax places upon the mills from the standpoint of operating capital, to which must be added the drain caused by the phenomenally increased overhead burden which mounts higher with each successive curtailment of hours, has been the problem of the failure of the AAA to apply similar compensatory taxes upon competing fibers. As announced on page 39, December COTTON, compensatory processing taxes were placed on jute fabric and yarn and paper products competing with similar cotton articles, which somewhat belatedly tended to ameliorate the unfair imposition on cotton manufacturers. On January 25th and 26th a hearing was conducted to consider an appeal from paper manufacturers asking that the tax on their products be rescinded. George A. Sloan, as president of the Cotton-Textile Institute, headed the witnesses appearing in protest to ask that the tax remain in force. Mr. Sloan clearly cited proof that competition definitely exists between paper and cotton, giving illustrations of consumption shifting from long established use of cotton to paper as a result of the cotton processing tax, and the lag prior to the imposition of a tax on paper.

Export regulations applying to the payment of the processing tax on cotton goods or goods of cotton content, which are exported, were reversed during January, simplifying the procedure in handling and securing the legal "draw-backs" for the mill. There was no change in the confused status, reported on page 41, January COTTON, relative to the tax on stock in process on August 1. Mills were still left to the selection of a conversion factor for use in computing the tax to be paid on stock in course of first domestic processing.



Automatic Control Feeding System



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COTTON MANUFACTURERS

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November 7, 1933

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Dear Sirs:

It occurs to me you might be interested in our comments on the automatic control feed system which you recently installed on our one process pickers in our Peterborough plant.

This system is meeting our expectations in every way. We are impressed with its accuracy and simplicity, and we believe our "distributor troubles" are a thing of the past. From our observation this system does deliver a very uniform sheet of cotton to the picker, for the laps are very even both as to its total weight and yard for yard.

We are also much pleased with the grid or cleaning arrangement under the distributor. These grids are taking out a considerable amount of broken seed and leaf.

Yours very truly,
The White Mills of New Hampshire

By:

JHH Jr:HLL

wins high praise

"Impressed with its accuracy and simplicity . . . our 'distributor troubles' are a thing of the past."

●

"Laps are very even both as to total weight and yard for yard."

●

"Grid cleaning arrangement is taking out considerable amount of broken seed and leaf."

●

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CURRENT TEXTILE TOPICS. . . .

Talk of the Month

The General Situation in Textile Markets

AFTER three months of cotton consumption between 600 and 700 thousand bales in the middle of 1933, it was not surprising that mill activity should droop a little in August and continue downward the rest of the year, with a sharp fall for December. It was, perhaps, more surprising that 1934 should get away promptly to an active start. This was the result of the new order of things under the code, whereby signs of over-production in an emergency period are a signal for immediate adjustment of operations. The progress of recovery, together with the control of production in the last quarter of 1933, worked to give 1934 a healthy position early in January.

Balanced production and good demand at the opening of the spring season, with the general economic situation giving great promise, was the picture at the middle of January. The year had opened with firm prices and, indeed, a quick upward tendency in various lines of cotton fabrics. Then came a mid-month boost in the value of raw cotton, heading the raw material once more toward the peak of recovery reached last July, from which a substantial reaction followed in the fall. Altogether the year's outlook was encouraging, among the chief problems being processing tax and forestalling legislative enactment of 30-hour or similar regulation of manufacturing.

As pointed out in some circles, the adjustments already made under the codes and the Government program for relief in various directions have put industry in the position where demand can be expected normally to expand. Obviously that is the basis for increase of employment by manufacturers, the spread which is the prime objective of the Administration program. In this stage of things, further arbitrary restriction of industry, a move that would clearly be a pure experiment and not a scientific proposition based upon demonstrated necessity, would seemingly be a step contrary to the intent of the Government and to the best interests of the country at large.

Industry has shown itself amenable to regulation, even beyond the code limits, when it appears that production is overrunning demand. It is nevertheless aware that a rising tide of demand is likely to justify not only the maximum under the codes but something greater as normal is reached. On the other hand, if this year started off with a strong price tendency in cotton goods, recognized as warranted by the fundamentals of the situation, the trade also had a warning from the fall experience that fabrics must accord with maximum public purchasing power. One of the strongest arguments against legislative action of a radically short work week is the unavoidable increase in costs of production, when restrictions already enforced have created consumer resistance to selling prices based fairly upon the prevailing costs.

Cotton manufacturers are satisfied that the experiment inaugurated last year was a happy one. A starting point had to be set. Various estimates have been made in recent years over what kind of schedules would satisfy the demand for goods under equitable competitive conditions. Some figured that the industry could be run to best advantage somewhere between 43 and 48 hours a week. If the recovery program works a widespread employment of the population, it is logical to expect a greater demand than in the past, even through former normal times. To force mills on a very low basis of operations just at the time when they stand to run profitably, with a larger employment of workers than in the past, certainly looks like throwing a monkey wrench into the machinery of the whole national program.

Recent conditions have been favorable to all interests: the manufacturers, the workers and the buyers. If the industry is allowed to proceed along the lines of studying conditions and adjusting operations in accordance with their fact finding, they will gradually ascertain the proper basis of operations. Already a stability has been attained which gives buyers the courage to anticipate needs more freely. In fact the manifest intention of the industry to control output may be construed as a force for impelling buyers to spread their operations, lest the practice of concentrated late purchasing of several years lay them open to embarrassment.

There was some hope at the start of the year that relief from the processing tax might be afforded, through Administration realization that it was a real burden upon manufacturers. The public has to bear this cost on cotton goods one way or another. But because of various propaganda, it has been led to believe that the cost could be absorbed easily by industry. If the public must support all the program for relief of agriculture, it is hardly fair to discriminate on one part thereof and make a certain section (the cotton industry, or any other group) assume a special burden in addition to its share of the common taxation.

New England Mill Situation

CONSUMPTION of raw cotton, resumption of operations by important mill units long idle and, particularly, restored dividend payments, tell a continued story of revival in the cotton industry of New England. For week after week in the latter part of 1933 the forwardings of cotton to mills of New England made notable gains over those of the same time in 1932. The industry naturally had a reaction in the last quarter, but it maintained relative gains and

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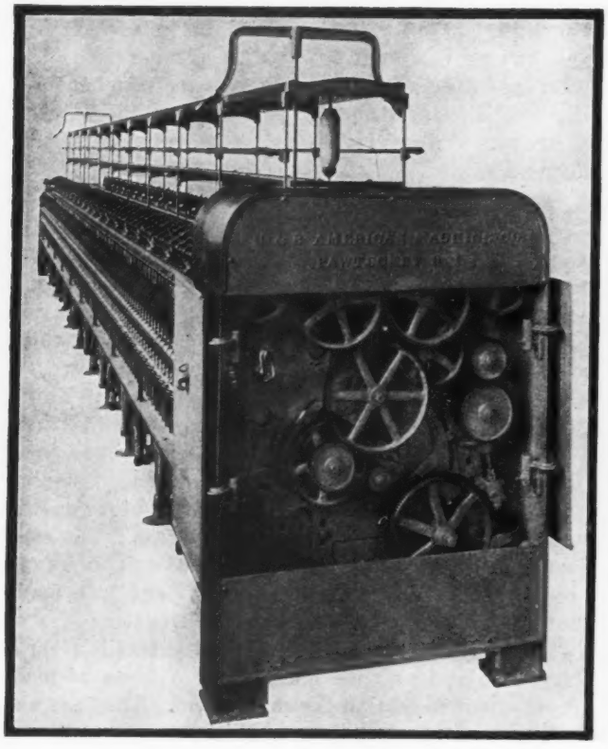
In the earthquake we see vibration in its worst form.

Vibration in textile spinning machinery is, of course, far less violent, but for that very reason more insidious. It wears out bearings prematurely and reduces the life of rings and travelers. This results in increased cost of upkeep, shorter machine life and increased production cost due to an excessive number of ends down.

H & B Spinning Frames have always been very sturdily built to reduce vibration to a minimum and the new Model B is no exception to the rule. It has the modern, heavy, box type head end with all gears extra wide faced. Samsons also are designed to provide extra strong, rigid support for the machine.

The creel (metal bound) is built with upright side rods which are securely bolted through the deck board to cast iron cross girts. Thrust of builder motion is carried on special ball bearing and collar. Ring rails are of the interlocking type, jointed at the lifting rod head. Spindles are designed for heavy duty with large oil capacity base and can be furnished with roller bearings if desired. Superpolished rings allow for higher speeds and longer traveler life.



While minimizing vibration and its effects, the Mobel B also offers all other modern improvements as listed herewith.

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Swivel Hinged Doors, easily opened and safety locking.
New Flexible Builder Motion, easily and quickly adjusted for any style of wind or length of traverse.
All Feet equipped with jack screws easily adjusted for leveling.
Samsons accurately milled for roller beams and spindle rails, and slotted to allow for adjustment of latter.
All Gears and Bearings oiled from outside through tubes and special oil cups conveniently located.
New Doffer Locking Device, simple in design and easily operated.
Cylinders are dynamically balanced.
Variable Speed Drive when specified.
Four Roller Long Draft when specified.
Reversible Tape Drive when specified.
Equipped for Large Package Spinning when specified.

H&B MODEL B
SPINNING FRAME

hence the stocks of raw material did not accumulate and buying was kept up. At the year-end the forwardings did fall below those a year previous, but the conditions and spring prospects at the start of the month under review were suggestive of volume demand again.

Since last summer much has been published in these despatches concerning resumptions of mills closed for months and years, especially in the textile communities of Massachusetts which had lost a heavy proportion of their industry over the past decade. The movement continues and a confident spirit prevails in such centers as Fall River and New Bedford, even in Lowell, as well as the States of Maine, New Hampshire, Rhode Island and Connecticut. Among the latest important projects is the recent step taken by the Grinnell Manufacturing Company toward getting its plant at New Bedford into operating shape after a year or so of idleness. The start was made in December, when seasonal quiet obtained, and no definite announcement of plans was made, but the move was considered significant.

Financial observers are citing the textile field in New England as once more, after a lapse of many years, a sound market for investment. They are also pointing out that the opportunities are exceptional, for the reason that the period of stress through which the industry has passed made investors so shy of mill properties that values of stocks shrank to ridiculously low figures. At any rate, they begin to look ridiculous in the light of prospects today. It was logical to shy at mill properties, when one never knew what one would sink next. But now the case is decidedly different.

Some recognition of this situation is evident and no doubt the investor attitude will be showing a marked change if conditions follow expected lines. In fact it was stated the last of the old year that the return of the Pilgrim Mills to payment of dividends after three years had had a stimulating effect upon the mill share market generally at Fall River. This is not surprising, since the recovery in 1933 was so solid as to bring several of the Fall River mills back to dividend payments and many textile securities have been selling on a basis far under the proportional per share value of the net quick assets, not to mention at all the plant and equipment.

Mills of New England have been voicing their protest against the processing tax. They face, in the manufacture of the finer goods, a smaller relative burden than in the production of coarser fabrics. Yet at best the extra cost is a serious factor in making prices to suit consumers, as has been pointed out in statements of prominent mills of this region. "The Federal processing and floor taxes under the Agricultural Adjustment Act," said the Nashua Manufacturing Company in its annual report for the fiscal year ended Oct. 31, 1933, "are a very heavy burden, and tie up a very large amount of quick capital. The amounts assessed against your company from Aug. 1 to Oct. 31 amounted to $698,932.85."

Among the interesting remarks on the outlook for this year, especially in view of the consideration of drastic shortening of schedules by legislation, was a statement of a Fall River mill treasurer that "before the end of the year we will find there is not enough equipment to meet the demand." He made the statement on the assumption that the return of five millions to work throughout the country could not fail to react favorably on the demand for cotton goods. It would not be surprising that the liquidation of the industry had been overdone in recent years and the time may not be so far distant when new forward progress may be in order.

Quickening of activity in unfinished cottons from the start of the year had for its background a confidence among finishers in the spring development of retail business better than usual. The New England finishing industry reported well sustained employment through the normal quiet of year-end business, yet the statistical position was favorable by reason of the active holiday retail merchandising. Predictions were made that demand within a few weeks might become not only broad but actually urgent for finished goods and an extended season of buying was forecast in the middle of January.

COMMENT ON THE COTTON MARKET

New Orleans, January 13th, 1934.

DEVELOPMENTS of the first days of the new year have fulfilled expectations as to the probability of general business keeping on the upgrade—on the road to recovery—as thus far this month nothing has developed to alter the situation. In fact it seems that returns, as to trade improvement, indicate that early estimates were rather too conservative.

As for cotton, except for temporary slight reactions, the trend of values has been almost steadily upward during the past month. Compared with one month ago, raw cotton (spots) is about $5.00 per bale higher. While there was curtailment by domestic mills during December for the purpose of preventing stocks of the finished product accumulating, there continued a good demand for goods, especially during the first half of January, part of which was credited to the government for the needy. As a result, and because of the important advance in the price of raw cotton, quotations were raised sharply.

In the future department, while there was much selling at times, credited to the government, there was during the past two weeks much of price fixing and trade buying, and there was good buying of Europe and India. The Jap-Indo agreement tended to harden the Bombay market. In America, due to the holding movement on the part of the interior, offerings were light, as were receipts, and that basis ruled strong and higher. These conditions came of the government's provisional ten cents loan plan, embodying acreage reduction requirements, etc.

CENSUS BUREAU REPORT

United States—Bales—	This season	Last season
Consumption of lint, December	348,393	440,439
Consumption of linters, December	51,624	48,068
Consumption, including linters, December	400,017	488,507
Consumption of lint, 5 months	2,415,690	2,342,005
Consumption of linters, 5 months	337,295	282,296
Consumption, including linters, 5 months	2,752,985	2,624,301
Mill stocks, December 31st	1,641,742	1,530,040
Stocks in public storage and warehouses, December 31st	10,313,461	10,349,811
Stocks in mills, public storage and warehouses, December 31st	11,955,203	11,879,851
Stocks in mills, public storage and warehouses, November 30th	11,985,235	12,148,022
Active spindles during December	24,840,870	23,799,742
Active spindles during November	25,423,348	24,368,478

During the past month, or since December 18th, the price of domestic new mined gold has been virtually pegged at $34.06 per ounce. In consequence sterling exchange ruled comparatively steady, but some important developments

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SAVE-LITE— Enamel Finish has won the favor of many Industrial Engineers because of its superb quality of finish and whiteness. The working qualities of SAVE-LITE are all that might be desired. It brushes with great ease and is adaptable for spray application. The proper balance of formula and thorough fine grinding gives great hiding power.

The BLUE Drum

MILL VILLAGE PAINT— A high quality combination pigment paint made for the protection of exposed surfaces of Mills and Cottages. The formula we know to be ideal for the utmost in paint service under the most trying conditions. MILL VILLAGE PAINT is made of the highest grade materials, and the formula is properly balanced, which provides easy working, unusual covering and long life.

The GREEN Drum

VELVET ENAMEL— The ideal finish for the interior of cottages, a full enamel gloss being objectionable because of glare, and a flat finish being too readily soiled. Use Velvet Enamel for interior woodwork, plastered walls, concrete walls, wall board and Keene's Cement. Velvet Enamel may be washed repeatedly with soap and water.

The YELLOW Drum

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in this respect are possible in the near future since there have been rumors of late of possible major monetary moves in Washington.

According to the New York Cotton Exchange service, the world's stock of American cotton, including the unpicked, at the close of November, was about, compared with corresponding date last season—19,570,000 bales versus 21,276,000, of which the mills of the world held 2,719,000 against 2,458,000.

As to the world's cotton crop, recently the Department of Agriculture, Washington, estimated it to be as follows:

Bales—	This Season	Last season
United States crop	13,177,000	13,002,000
Foreign crop	12,323,000	10.598,000
World	25,500,000	23,600,000

BRITISH BOARD OF TRADE REPORT FOR DECEMBER

Year—	1933	1932	1931
Exports of yarn, pounds	11,000,000	12,000,000	15,000,000
Exports of cloth, yards	156,000,000	196,000,000	150,000,000

As in the case of British Board of Trade returns for December, U. S. consumption of lint during December was disappointingly light, it having fallen much below that of December last season, but this too may prove only a passing event, as recent advices from the mill districts tells of mills now running at a greater capacity than in December, some at full time.

MOVEMENT TO MARKET, EXPORTS AND SPINNERS' TAKINGS

Week ended, January 12th— Bales—	This season	Last season
Week's in sight (marketed)	166,000	261,000
Since August 1st	10,066,000	10,195,000
Week's exports from U. S., inc. Canada	212,000	166,000
Since August 1st	4,539 000	4,575,000
Week's spinners' takings of Am. (world)	348,000	309,000
Since August 1st	7,416,000	7,263,000

The movement to market, as noted above, continues light, reflecting the tenacity with which the interior is holding, and while exports have not been as good as generally expected during the month, they show some increase over the corresponding week of last season, and may pick up again. The same applies to spinners' takings, although they make a better showing since August 1st than for same period last season.

WORLD'S VISIBLE SUPPLY OF COTTON, JANUARY 12th

Bales—	This year	Last year
American	9,404,000	10.102,000
Of other kinds	1,912,000	1,686,000
Of all kinds	11,316,000	11,788,000

Now that the year has made a favorable start, further recovery in business reported, the future looks much brighter, there being no lack of evidence to justify taking a favorable view of the trade outlook. Carloadings continue to gain, the steel industry is expected to pick up as to running capacity, the lumber industry is active, with orders recently exceeding production, and much is expected of the important automobile industry, the future of which is considered very favorable. The general situation, present and prospective, has changed so much for the better, that it appears that America and the rest of the world is on the verge of a substantial revival in trade and industry.

The speculative markets appear to be awakening to the dawn of a better day, with Europe and far away India participating lately in the desire to share in the benefits expected to come of probably active and rising markets.

Recently Liverpool cabled: "Firmness of cotton reflects broadening outside speculative interest. Tight situation resulting from government's loan policy, coupled with prospect of reduced acreage. The trade believes that these developments open up the possibilities of a broad bull movement should growing season develop unfavorably."

From all parts of the country come reports of unexpectedly high level at which retail sales are being maintained, which is better than seasonal, and buying of spring merchandise in wholesale markets has broadened widely, according to weekly trade reviews of late.

What the Southern Mills Are Doing..

The Armco Finishing Co., Burlington, N. C., has been organized by Herman and Benjamin Cone, of Greensboro, and Britt H. Armfield, of Burlington, Equipment for finishing rayon and silk goods is being installed in the building formerly occupied by Wilson Finishing Co. Mr. Armfield is manager of the plant, and Henry Dieckman, formerly of Paterson, N. J., superintendent.

J. E. Sirrine & Co., Greenville, S. C., are engineers on a project at the Anderson (S. C.) Cotton Mills involving the installation of 12,000 new spindles, at a cost of approximately $75,000.

Community houses are being constructed at each of the three units of Aiken Mills, Inc., at Bath, Langley, and Clearwater, S. C.

A community building containing auditorium, club rooms, gymnasium, etc., is being erected at the Slater Mfg. Co., Slater, S. C.

Monroe Cotton Mills, Monroe, Ga., have installed 50 new Model E Draper looms for purposes of balancing production.

Alba Twine Mills, Mariposa, N. C., have replaced 3,300 spindles with 1,700 long draft spindles.

U. S. Rubber Company have let contract for the erection of 25 dwellings in the village of the Shelbyville Mills, Inc., Shelbyville, Tenn., recently acquired by them for operation in conjunction with their Winnsboro Mills, with plants already at Hogansville, Ga., and Winnsboro, S. C.

Alabama Mills, Inc., is the style of the firm which has taken over and is operating the ten plants of Alabama Mills Co., in Alabama. Paul A. Redmond is president of the new corporation, E. J. Heitzberg, of Nashville, Tenn., is vice-president, and W. E. Hendrick, secretary.

The Pell City unit of Avondale Mills, Pell City, Ala., have installed 50 new looms.

Morrilton Cotton Mills Co., Morrilton, Ark., has resumed operations, the plant having been closed for five years. It is reported that C. V. Hoke and Ben Lessenberry are operating the mill.

Whitehall Mills, Athens, Ga., have petitioned for a charter. Thomas M. Johnson, J. F. Jackson and D. C. Hull all of Savannah, Ga., are the petitioners. It is reported the organization is formed to operate the Whitehall Yarn Mills, Whitehall, Ga.

Burlington Mills, Burlington, N. C., are erecting 30 new homes for employees.

Fulton Bag & Cotton Mills, Atlanta, Ga., recently installed 156 deliveries of new drawing from H. & B. American Machine Co.; and 74 cards, from the Nashawena Mill, through Comer-Kimmel Machinery Co.

Crystal Springs Bleachery, Chickamauga, Ga., recently installed a Hygrolit yarn conditioning machine.

Morgan Cotton Mills, Inc., Laurel Hill, N. C., Waverly Mills, Inc., Laurinburg, N. C., Hampton Spinning Co., Clover, S. C., and Elk Cotton Mills, Fayetteville, Tenn., recently installed the H & B A-1 system of single process picking.

Advance Thread Co., Salisbury, N. C., has been granted charter with $50,000 authorized capital, and $300 stock subscribed by Forrest B. Gardner, M. C. Gardner and William Hardin, all of Salisbury.

Cleveland Cotton Mills, Shelby, N. C., are erecting a two-story experimental laboratory, designing and drafting department.

Shoaf-Sink Knitting Co., Lexington, N. C., has been organized by J. T. Hedrick and associates to operate the mill formerly owned by Shoaf-Sink Hosiery Co.

Plymouth Hosiery Mills, Inc., High Point, N. C., have taken over the plant of the Royal Hosiery Mills. W. A. Davis and W. S. Swain are in charge.

Archer Hosiery Mills, Columbus, Ga., are erecting a one-story brick addition at a cost of $2,500, with J. P. Bradfield as contractor.

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● Practically every machine from the Grey Room through the Finishing Department and Calender Room if replaced according to TEXTILE'S latest design and construction would have Roller or Ball Bearings in every place or location where they could be used to advantage. ● In these times any advance that is conducive to smoother operation, reduction of power and maintenance, all contributing to increased efficiency, deserves careful consideration.

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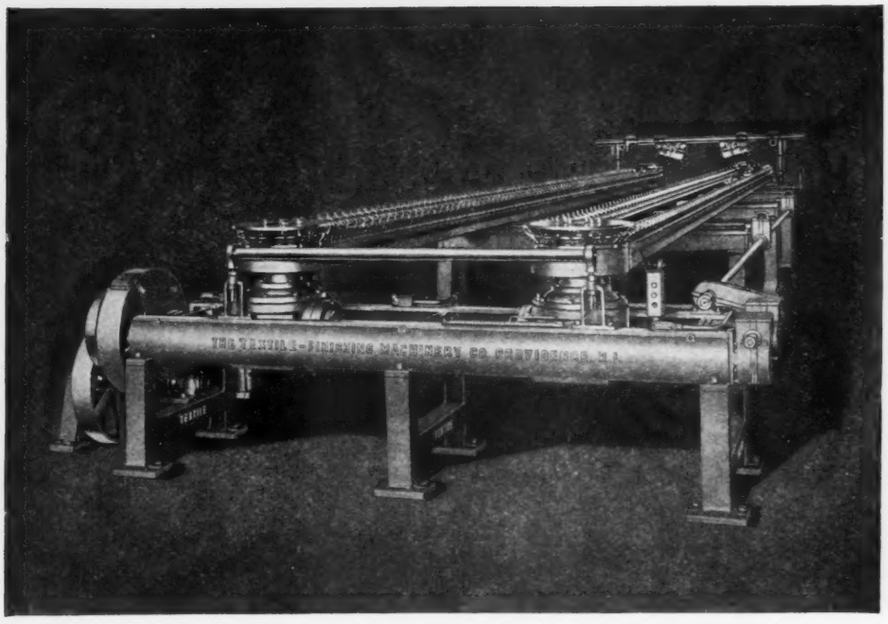
PADDERS
PILERS
SANFORIZING MACHINES
SCUTCHERS
SINGERS
SOAPERS
SQUEEZERS
TENTERS
WASHERS
WINDERS



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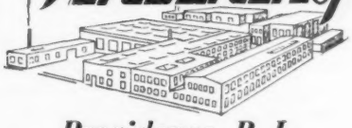

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PERSONAL NOTES

about Men You Know

TAYLOR R. DURHAM has been made secretary of the recently formed Southern Hosiery Manufacturers' Association and has established headquarters at 1216-17 First National Bank Bldg., Charlotte, N. C. Mr. Durham has been engaged in the banking business in Chattanooga, Tenn. His urst activities in his new position will be to develop the membership of the association among southern hosiery mills.

Mr. Durham

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R. J. MATHEWSON was re-elected vice-president; A. H. THATCHER, treasurer; F. R. HARRIS, secretary; S. M. GAMBLE, assistant treasurer, and J. S. VERLENDEN, chairman of the board.

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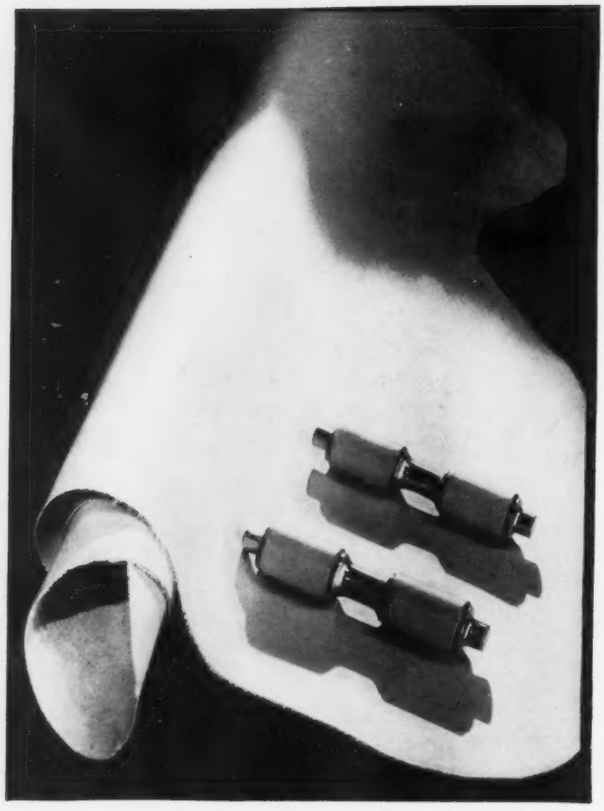

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Accidents Don't "Happen" ---They are Caused!

By F. M. Carlson

AMONG the many details connected with cotton manufacturing, the prevention of accidents to workers looms up as very important. Accidents to employees should be prevented if only humanitarian reasons are considered, for no one wishes to see his fellow man suffer from injuries received while making a living.

Economic reasons also call for accident prevention, and all are more or less familiar with statistics which show the loss in money value, caused by time lost from work, hospital and doctor fees; hence anything that can be done to lessen such conditions should have serious consideration. Causes of accidents are numerous, but in the space allotted for this article only a few of the most serious will be considered.

Probably more fatal and serious accidents have occurred from the handling and breaking of belts, than from other causes. Since the use of motor drives is increasing many belts are being discarded but there are still enough in use—and always will be—to make a survey as applied to accident prevention profitable. Metal fasteners are in use to a large extent on belts, and sometimes these become very dangerous.

If a break occurs while the belt is moving rapidly and should strike an employee, the metal fastener is likely to cause serious injury. The writer recalls two very serious accidents from this cause, one resulting fatally, the other in a loss of a limb.

Metal fasteners are quickly applied and undoubtedly save time, but there is nothing safer than the use of "lace leather" or, in the case of wide counter belts, having them made endless.

A good practice is to have a responsible man examine belts during the time machinery is stopped, and repair any in bad condition, so there will be no breaking when in motion. Section men should report belts needing attention; this will not only save stoppage of machinery, but lessen the chance of an accident, for there is nothing more dangerous than the breaking of a swiftly moving belt.

If the suggestion outlined is carried out it will also prevent the danger to employees in putting belts on fast revolving pulleys.

Many serious accidents result from falls received from scaffolding put up in a flimsy way to save time, when repairs are needed to motors, shafting, or pulleys. Too often a plank is stretched across machinery in a dangerous manner, or a box is used to stand up on, and the result is a fall for some workman. Better take more time and see the men have a secure footing upon which to stand.

There are a number of devices on the market designed for setting up a good foundation for scaffolding even in the narrow spaces in a textile mill. It will pay to have them in stock and use them when needed.

Many electrical tools are now being used for repair work, and these should have careful inspection from time to time. A short circuit may give the operative a shock, and while the current may not be powerful enough to cause serious injury, if he is working above the floor level it may cause him to lose his balance and fall. Too much care cannot be exercised in handling all the electrical equipment in the mill, and only those who have been instructed should handle the motor switches and other electrical appliances.

Bad floors, containing splinters, should be repaired, for often the employee may be wearing shoes that permit splinters to enter the foot.

These are a few of the many causes of accidents, all superintendents are familiar with others, and the problem is how to prevent such occurrences.

Some Helpful Suggestions

All mills carry insurance to cover liability caused by accident, and the rate allowed the insurance companies is governed by the amount of money paid by them on account of time lost or death through injuries sustained by employees. Less accidents mean a cheaper rate for insurance, therefore everything possible should be done to prevent them.

Insurance inspectors will help the management by making suggestions, and although sometimes you may think their advice foolish, if you investigate you will find back of it all there is a good reason for their request.

A splendid idea is to keep in touch with the employees by giving talks on accident prevention in different departments. Stop the operation of the machinery during working hours for ten minutes and give a prepared talk on some subject applicable to that department, and you will be surprised at the cooperation you will be given.

Use the posters supplied by the insurance companies.

Have the bulletin board show the number of accidents in each department over a period of time, and encourage a competitive spirit in making good records.

Encourage workers to report conditions that they think are dangerous in their particular line of work.

Many accidents are the result of carelessness or breaking of safety rules, and when this happens it is better to discharge the person who disobeys than to overlook the disobedience. This will also make the worker more careful if he secures another job and protect the mill from needless accidents.

Keep your machinery well guarded at the danger points, your premises in good condition, follow the suggestions of the insurance companies, and educate your employees to be careful. The educational process may seem discouraging sometimes, but by following the injunction of "line upon line, precept upon precept" it will bring results, and accidents will decrease, thus saving both suffering and money.

NEW TEXTILE EQUIPMENT AND PUBLICATIONS . . .

Saco-Lowell Developing New Drafting Mechanism for Roving

Saco-Lowell Shops, 147 Milk St., Boston, Mass., in January issued a preliminary announcement of "a new and radically different method of drafting for roving frames," which they state is nearing completion. It is announced that the system is simple mechanically, with no belts or complicated rolls, but with exceptional drafting capacity. It is stated that the arrangement is such that at no single time is the stock subjected to a longer draft than is now standard practice. "The principle", the company states, "is one the correctness of which has long been recognized. We believe this system will completely revolutionize all card room organizations." Formal announcement of the details of the system will be made soon, it is stated.

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Drive Catalogs

Rockwood Manufacturing Co., 1801 English Ave., Indianapolis, Ind., manufacturers of Rockwood short center flat belt drives, have recently issued five new folders, covering current developments in Rockwood pivoted motor drive bases. These include: bases for small motors; vertical and ceiling drive base; standard drive bases; and a portable power truck, for carrying a spare portable motor outfit.

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Improved Patented Underclearer Roll

The improved Lucas underclearer roll has been placed on the market by the manufacturers, The L. M. Hartson Co., North Windham, Conn. It is distributed in the South by Cook-Taylor Co., Inc., Box 747, Charlotte, N. C. This roll is constructed of specially compressed paper, with rock maple ends and steel gudgeon pins; spiral grooves are inserted to catch the broken strand immediately and avoid double ends, also keeping the plane section of the fluted roll, which is smaller in diameter, clean, not letting the fly collect and then let go in bunches. The groove wipes and assists in keeping the fluted roll clean, it is explained. The roll is hollow-sealed, and does not warp under the conditions of the mill.

The company also manufactures silk and rayon bobbins, stainless steel, fiber, Bakelite and dogwood heads, and enameled bobbins.

:: :: ::

New Synthetic Fiber Lubricant

Glyco Products Co., Inc., Bush Terminal Bldg. No. 5, Brooklyn, N. Y., have announced Aquaresin GM, a glycol bori-borate, developed for the lubrication of cotton and allied fibers through joint investigation by the company and the textile chemistry and dyeing laboratories of the textile school of Alabama Polytechnic Institute, Auburn, Ala. The report on this research for the development of synthetic lubricants for textile fibers brings out the properties desired in an ideal fiber lubricant, laying special emphasis upon the possibilities in "re-lubrication" of raw cotton stock after vat and sulphur dyeing. Another point of special interest is the restoration of "weathered", "perished", "export-compressed" or "air-dried" cottons to a desired waxiness and resiliency and "strong pulling" quality. The advantages claimed for the new product are: Waxiness and high resiliency restored on raw cotton without sticky "feel"; high hygroscopic value restores the "re-lubricated' raw cotton fibers to moisture content comparable to that of desirable untreated raw cotton stock; high electrical conductivity lessens danger of fire and reduces "fly"; promotes internal and external lubrication of fibers. The result is not gummy or corrosive to exposed metallic substances, it is pointed out; the product is water soluble, removable through the use of a hot water bath or the use of mild scouring agents.

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Literature on Shipping Efficiencies

Acme Steel Co., 2840 Archer Ave., Chicago, Ill., have recently completed the production of a new set of literature covering efficiencies and economies effected in preparing boxes and loads for shipment. A great many different types of shipping methods are covered —from strapping cartons, or making bundles of small packages—to making unit load of a thousand pieces of steel tubing. "Doc Steelstrap", a character created by the company, prescribes in each piece of the literature on the treatment of over-heavy shipping costs and under-strength shipping containers.

:: :: ::

Stainless Steel Wire Rope for Bleaching Kier Assemblies

Hazard Wire Rope Company, Wilkes-Barre, Pa., have developed an improved method for holding down the load in bleaching kiers with an assembly of stainless steel wire rope. These assemblies are built of 18 per cent chromium, 8 per cent nickel stainless solid alloy, the complete assembly weighing less than 25 pounds. It consists of a center ring 12-inch in diameter to which are attached six ropes with hooks at the other ends for hooking into the holes in the angle irons or other attachments on the inside wall of the kier. Ring, hooks, rope and attachments are made of stainless steel. The ropes are fastened permanently to the ring by eye attachments as well as to the hooks by patented fittings. The eye attachments are free to move on the ring. The advantages claimed are the light weight of wire rope, with high strength, and resistance to the effects of peroxide solutions, steam, etc.

:: :: ::

New Silk Spindle Belt

E. F. Houghton & Co., Philadelphia, Pa., have introduced a new type of "non-skid" silk spindle belt, known as Okay-Tred. It has a ribbed surface for gripping the spindle better, and is designed uniform in thickness and texture for eliminating vibration and uneven twist. A special precision method of finishing the leather, it is explained, holds the variation in thickness to less than .003-inch. The leather is joined with long laps, and the finished belt is given a long "running-in" at high speed under tension to remove original stretch. It is furnished in lengths for all standard spinning frames and can be cemented at the mill.

:: :: ::

New Floor Re-surfacing Material

Stonhard Company, 401 N. Broad St., Philadelphia, Pa., have announced a new type of floor repair material for repairing irregularly worn, broken factory floors, trucking aisles and platforms. The material is mixed with sand and cement and the mortar is laid cold, ½-inch thick. The material will bond to concrete, wood, brick, wood block, asphalt or composition floors, it

The new "Lucas" patented underclearer roll . . .

The Penalty of Leadership--

IT has come to our attention in recent months that a wide variety of systems of handling labor in various textile mills have been referred to frequently as the Bedaux Plan, when Bedaux does not now have, nor never has had, any connection whatever with the mills specified.

Difficulties have often been encountered where home devised methods and inferior systems have been crudely applied.

There is only one Bedaux Principle of Labor Measurement. It is successfully operating in many textile mills. Bedaux stands on its record with textiles and in every line of industry—a uniform record of increased wages to employees, substantial savings in reduction costs and increased quality.

In the spirit of fairness to your own situation and to us, we ask that you verify the fact that genuine Bedaux Principle is in operation in a mill before referring to it as Bedaux.

THE CHAS. E. BEDAUX COMPANY

OF NEW YORK, INC.

DOUGLAS S. KEOGH, Pres.
J. J. SKELLY, Gen. Mgr.
22 East 40th St., New York City

H. B. CRAFT, Vice-President,
In charge of Southern Operations
30 Camden Road, Atlanta, Ga.

THE BEDAUX PRINCIPLE DEALS WITH THE HUMAN ELEMENT ALONE

is stated, and is ready for traffic 36 hours after being laid. The manufacturers emphasize that the ability of applying this cold eliminates fire hazards.

:: :: ::

Measuring Size of Foot in Full-Fashioned Hosiery

Edward R. Ammon, Reading, Pa., manufacturer of the Ammon inspecting machine which includes automatic operation, automatic testing and automatic counting, announces the addition of a fourth major function to the machine—that of automatic measuring of the feet of full-fashioned stockings to insure exact and correct sizes. This, Mr. Ammon explains, eliminates as nearly as is humanly possible, complaints arising from incorrect sizes, including short feet causing the stocking to slip down at the heel, or the forcing of the large toe through; and stockings that are too large and cause wrinkles at the ankle, and discomfort inside the shoe resulting from the turning of the extended portion beneath the toes.

"Careless inspection of hosiery as to size," said Mr. Ammon, who is known throughout the trade as an inventor of many new developments for the mills, "is just as bad if not worse than hosiery with rings or shadings, owing to the physical discomfort which an improperly sized stocking can cause the wearer. * * * On the new machine improperly sized stockings are detected at once instead of relying on the boarders to separate those improperly sized as is usually the custom." Mr. Ammon states it has been his experience that where stockings were from one-half to three-fourths of an inch too long or two short, they were being boarded to the size for which the lot was intended. "Therefore," he said, "one can readily see that the person buying a pair of 9½ stockings may secure one stocking measuring 9½ inches and the other anywhere from 10 to 10½ inches in length in the foot, the latter being boarded down to 9½ but actually being much larger than the customer demands." Through his efforts, Mr. Ammon has revolutionized this phase of the industry as pertains to the correct sizes on the inspecting machine, it is pointed out.

Mr. Ammon described a practical demonstration made by one hosiery manufacturer, in which a living model whose correct size was 9½ was used. After the stockings were separated in the grey during the regular inspection process, they were dyed and boarded according to the sizes they actually measured. Those laid out as 9½ fit the model perfectly. Those that were 9s, without her knowledge, were too short and caused the wearer to notice undue pressure at the heel and toe. The longer sizes when pulled in place at the toe and heel showed there was sufficient material to form objectionable wrinkles in the foot proper. In making these demonstrations, it is stated, in no case has it been impossible to predetermine the exact size that the stocking would finish after giving it ordinary inspection on the new machine.

In another actual test with the measuring unit in another mill, Mr. Ammon stated, the machine operator thought the machine should be adjusted a size smaller owing to the difficulty she experienced in putting the stockings on the size form for which they were intended, proving, he pointed out, that the stockings were knit too small in the feet. In another instance a mill with the reputation of knitting their stockings over-size in the feet, a 10½ size was found in a two-dozen lot supposedly knit 9½. Due to the elasticity of hosiery fabrics, it was pointed out, it was comparatively easy to make a good job of boarding it on the 9½ inch form, but later when reboarded on the 10½ inch form it was equally satisfactory.

With reference to the testing of hosiery, Mr. Ammon declares this to be "a function that is entirely separate from inspecting and has an entirely separate use. A stocking may be manufactured entirely perfect in every detail and still a weakness may exist due to careless handling of the topping bars or many other manufacturing causes. Even greater is the fact that weaknesses develop from the silk, over which the mill has no control, and which it is impossible to detect without a proper testing mechanism."

A 3-thread 51-gauge stocking, Mr. Ammon explained, with a fair number of courses to the inch will withstand a pressure of 80 pounds to the square inch and will stand considerable wear and abuse if no individual thread is pulled. The air motor testing machine produces an average of about 8 pounds on all the single fabric of the stocking and more on re-inforced sections; the pressure being sufficient, it is pointed out, to expose weak places in the stocking irrespective of the cause. "The margin between the normal strength of the stocking and the pressure applied is so great that it is easy to realize that fabric which should withstand a pressure of 50 pounds or more to the square inch is definitely defective if it will not stand the 8 pounds applied by the machine," Mr. Ammon explained. "Even when making reinspection tests weaknesses in the fabric which are not suspected are revealed." It is Mr. Ammon's experience after actual testing that out of every four holes in stockings only three are found by the pairers and the fourth reaches the consumer. He contends that only by the use of the air motor in testing for defects can all imperfections be located promptly.

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Textile Patents

According to Paul B. Eaton, patent attorney, Charlotte, N. C., Oscar V. Payne, of the Crompton & Knowles Loom Works, has secured a patent on a slide slip feeler for looms, the patent having 29 claims.

John F. Schenck, Sr., Lawndale, N. C., secured Patent Number 1,937,414, Claim 1 reading as follows:

"A winding and tensioning mechanism for cord braiding machines comprising a reel for taking up cord as delivered from the braiding machine, a drive belt for the reel for which the tension is variable for regulating the driving force transmitted to the reel, means for driving said belt, and means controlled by the tension of the cord between the braiding machine and said reel for tensioning said drive belt in inverse proportion to the degree of tension on the cord."

This claim, interpreted, means that the tension of cord coming from the braiding machine determines the speed of drive of the take-up mechanism. For example, when the cord becomes too slack, the speed of take-up is increased and if the cord becomes too taut, the speed of the take-up is lessened.

Gaston County Dyeing Machine Co., Stanley, N. C., secured two patents, one on a washer to be placed between packages of yarn in a dyeing machine and another on a dyeing beam having a perforated barrel and a plurality of rings inside the barrel for supporting same.

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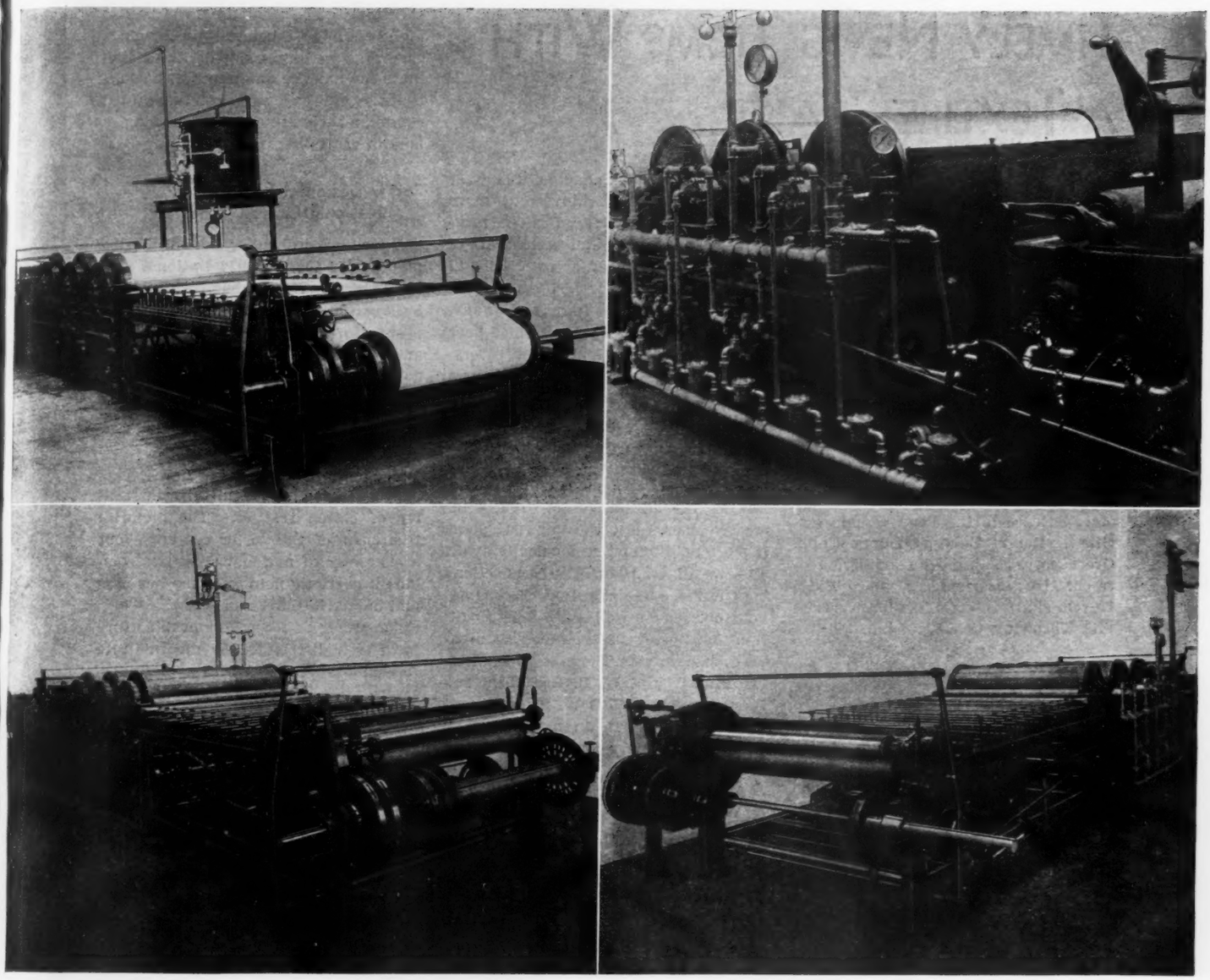
Device for Removing Condensate

The Coe Manufacturing Co., Painesville, Ohio, have produced the Coe drainator, for removing condensate from steam condensing devices, kettles, presses, heating and processing machines. The device has no moving parts, and relies for its operation on the utilization of the thermo-dynamic properties of steam and hot water to regulate the flow through the device. It provides, the manufacturers point out, a positive, visual indication that condensate is flowing and is being eliminated; a means for handling entrained air, the capacity of which increases in proportion to the amount of air present; it operates on any steam pressure up to its mechanical strength without any exchange of parts; and can be installed without a by-pass.



FIVE CYLINDER SIZING MACHINE

FOR
SYNTHETIC YARNS

The efficient and economical performance of our Sizing Machines has justified the great expense and amount of effort made by us in the designing and building of these Machines which have many special features of proven advantages not found in other Equipments. We particularly call your attention to our special features of complete tension control, and Pre-Drying Unit located between the Size Box and the Cylinders.

For complete detailed description, specifications, prices, etc., write or wire

Cocker Machine & Foundry Company

Main Office and Works
Gastonia, N. C.

Northern & Canadian Representatives
J. S. Fallow & Company, New Bedford, Mass.

TIMELY NEWS ITEMS WITH A TEXTILE SLANT . . . .

New Silk Throwing Service in the South

The Augusta Silk Company, commission throwsters, Augusta, Ga., have been formed to provide a modern throwing plant for accommodating southern mills with throwing service on rayon, silk and Tussah—organzine, tram and crepe, in all combinations and twists, on skeins, bobbins, cops and cones. The management points out that the location of the plant in Augusta affords overnight service by truck to the major number of rayon and silk weaving mills of the South. The management of the mill has had 30 years of experience in the Pennsylvania territory. Robert Baker, O'Henry Hotel, Greensboro, N. C., is the southern representative; also represented are White Haven (Pa.) Silk Co., and Anthracite Silk Throwing Co., Wyoming, Pa.

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New Equipment at Georgia Tech

Several new pieces of equipment have been installed recently in the knitting department of the A. French Textile School at the Georgia School of Technology, Atlanta, Ga.: A Scott & Williams balbriggan web machine for cotton and rayon underwear material, and an 80-wrap half hose machine, as well as a Fidelity ribber. With these additions the scope of instruction at the school in knitting is widened. In addition, the yarn manufacturing department is extending its work by operating combing equipment, and making fine yarns for colored goods.

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Sonoco Moves Eastern Plant to Garwood, N. J.

The second major expansion in Sonoco Products Company during 1933 was completed in December with the removal of the eastern factory branch at Plainfield to permanent quarters in their own building at Garwood, N. J., seven miles closer to New York City. Following by a few months, the establishment of the Canadian Plant at Brantford, Ontario, this recent move completed the greatest growth in manufacturing capacity and betterment of service facilities ever accomplished in a like period of their history.

The new plant at Garwood, which has nearly 100,000 square feet of floor space, is equipped for making everything except cones and cork cots and until further machinery is installed as now planned, to make a complete unit, it will manufacture spools, tubes, cores, bottle bobbins and the various and sundry other items now in the line. Besides the advantages of greatly increased floor space, the Garwood plant is more readily and economically available to all transportation connections both ways—the important New England market, as well as the metropolitan, New Jersey and Philadelphia manufacturing areas. The eastern sales office in charge of W. B. Broadbent has been moved from 709 W. Front Street, Plainfield, to North Avenue, Garwood, N. J. J. K. Taylor continues in charge of manufacturing at the new plant.

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Cotton Fire-Resistant Material

A new fire resistant treatment for canvas promises increased life in service for this cotton fabric in marine service, according to the new uses section of the Cotton-Textile Institute. Canvas thus treated is said to be particularly adapted for use as covering for life-boats, life rafts, and other surfaces exposed to the peril of fire. Serviceability of canvas in these uses is often of short duration not through wear but because of damage sustained from hot ash or clinker falling from the stacks of vessels. The fire- retardant treatment is said to make canvas highly impervious to burns from this source. Another use for the fire-proofed canvas is as a re-inforcing outer covering for asbestos-sheathed steam lines. This re-inforcement is said to add considerably to the life of the asbestos sheathing. The treated canvas is also practical and economical for awnings ashore as well as on ship-decks, to eliminate the damage and annoyance sometimes caused by carelessly discarded cigar and cigarette stubs burning a hole in the fabric.

Sonoco's new eastern branch plant . . . .

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Poster Designed for National Cotton Week

A striking design for the official display poster for the 1934 National Cotton Week, May 14-19, has been selected by the Cotton-Textile Institute. The poster, to be developed in a red-white-and-blue color combination, will have nation-wide use to enhance public interest in what promises to be a material contribution from the cotton textile industry to the national recovery movement.

The slogan adopted is "For Everybody's Needs", suggesting the versatility of cotton textiles. The pictorial treatment of the poster centers about a character of national appeal to combine a patriotic note with the business and industrial importance of the Week. Color proofs of the poster in miniature have been distributed by the Institute to enable advertisers within the industry to make early use of the design in connection with their individual promotional plans for Cotton Week.

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Scheuer Issues Cotton Goods Chart

Scheuer & Company, textile brokers and consultants, 72 Leonard St., New York City, are distributing the 1933 edition of their comparative cotton goods chart. This compilation has come to be looked upon as an official document—its scope and clarity make it most valuable. It is a complete price record. Among other statistics, it portrays a price history of 64/60 38½-inches 5.35, the standard print cloth of the market, from 1913 to 1933. It records the highest and lowest mill margins and prices attained during this period; also the cotton crop and price movements. In addition, there are included the high and low quotations, by months, of a range of staple cotton fabrics and raw cotton for the years 1931, '32 and '33; likewise a similar record for 1926. The National Administration having indicated that it has set 1926 prices as its approximate objective, it was felt a comparison of these figures would be of some value. Production statistics covering the years 1927 to 1932 inclusive were also reflected. The increased costs created by N. R. A. Code conditions are treated separately, as is the processing tax. Thus, a more dependable comparison with previous years is made

possible. Inasmuch as the textile code was the first to be passed, this latter record is of particular significance. The chart is mounted on a heavy cardboard base and is constructed so that it can be conveniently hung or framed.

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Group Insurance

Suncook Mills, rayon and cotton manufacturers, of Suncook, N. H., have announced the adoption of a group life insurance plan, which will carry benefits of approximately $420,000, for more than 700 employees. The program is being administered by the Metropolitan Life Insurance Company on a cooperative basis, with the employer and employees sharing the cost. Individual amounts of life insurance under the plan will range from $600 to $3,000, according to the employee's grade.

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Nopco Reorganizes Executive Staff

A general reorganization of the executive department of the National Oil Products Company, Harrison, New Jersey, has been announced by C. P. Gulick, president. Vice-President J. H. Barton has been relieved of his duties as head of the farm feed department and has been made general manager of the company. He has been placed in charge of production and the physical properties of the company, including plants, warehouses and real estate.

Secretary G. D. Davis has been appointed general sales manager in charge of the sales of the industrial, farm feed and Admiracion departments. Treasurer Ralph Wechsler has been relieved of many commercial duties in order to permit him to concentrate on his work as technical director of the company. He retains the general supervision of the Vitex department. Dr. C. I. Post remains as manager of the Vitex department in general charge of Vitex sales to the food industries.

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SKF Industries Move to Philadelphia

Effective January 1, 1934, the general and executive offices of S K F Industries, Inc., are now located at Front Street & Erie Avenue, Philadelphia, Pa. Headquarters were formerly at 40 East 34th St., New York City. The company announces that through a consolidation of the manufacturing, sales and engineering facilities, it is hoped to render improved service to their friends and customers.

Announcement is also made that the name of The Hess-Bright Manufacturing Company has been discontinued and all future trading will be done in the name of S K F Industries, Inc.

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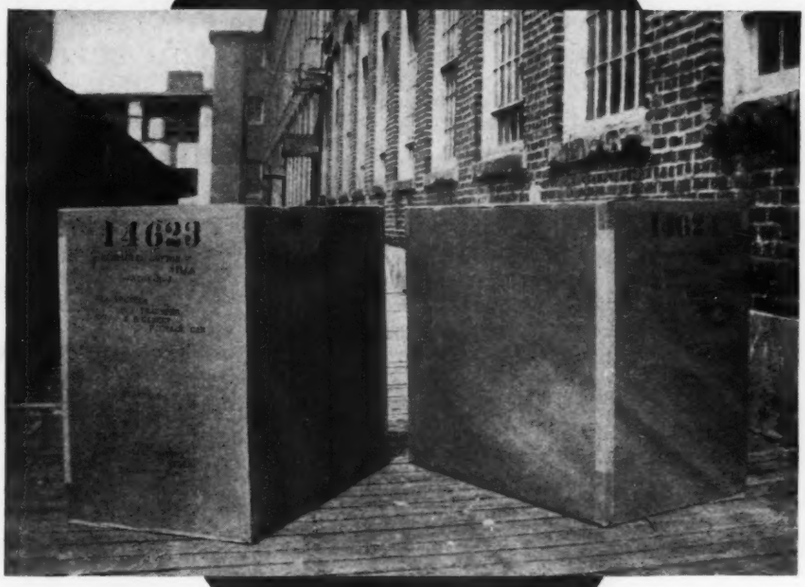
HINDE & DAUCH TEXTILE PACKAGES COMBINE LOW TARE with PROTECTION



H & D

ENGINEERS ELIMINATE ALL EXTRA WEIGHT, YET ASSURE 100% PROTECTION

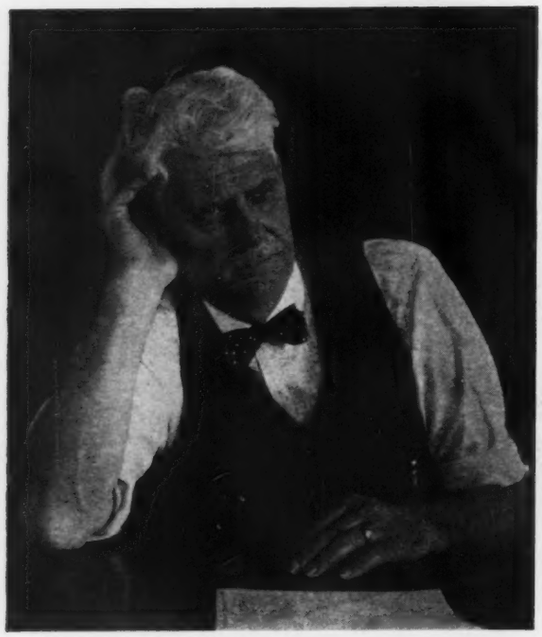
Regardless of whether your product is made of cotton, wool or silk—whether it is shipped to factory, jobber, wholesaler or retailer, there is an H & D engineered shipping box to carry it safely to its destination. Because of its low tare efficiency, freight and express costs are reduced to a minimum, yet H & D Package Engineers see to it that complete protection plus a liberal margin of safety is always assured.

To the remarkable serviceability of H & D shipping boxes is added their extremely low cost. It costs no more—even less—to purchase your shipping boxes from Hinde & Dauch, and in so doing, you receive the benefit of experience derived from manufacturing in a multiplicity of plants located throughout the country. The Hinde & Dauch Paper Company, 454 Decatur Street, Sandusky, Ohio. « « «

HINDE & DAUCH *Engineered* SHIPPING BOXES

LIGHT WEIGHT » DURABLE » DUST-PROOF

H & D FACTORIES ARE AT YOUR SERVICE IN
BOSTON, RICHMOND, BALTIMORE, PHILADELPHIA, NEW YORK, BUFFALO, CLEVELAND, SANDUSKY, SAINT LOUIS & KANSAS CITY. IN CANADA, TORONTO & MONTREAL



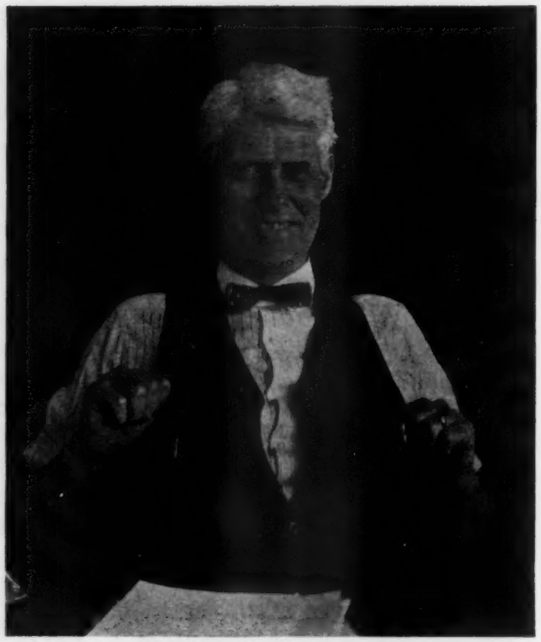
You say you must economize! Are you serious? Or is the serious expression just fruitless worry. The quickest, easiest and cheapest way to economize is to equip your processes with control instruments. We mean it. To economize requires action. You cannot meet present day conditions by *doing nothing*.

Before and After

As an example of true economy, take Slasher Control. In a large mill recently, the following economies were made and quality increased.

- **29% Saving in cost of size ingredients**
- **12-15% Decrease in steam consumption**
- **15-20% Increase in slasher speed**
- **25% Decrease in loom stoppage due to warp breakage.**

You can probably guess how much these savings would mean in your mill. If you seriously must economize, do not put off investigating the value of automatic control on your slashers. Write Foxboro today.



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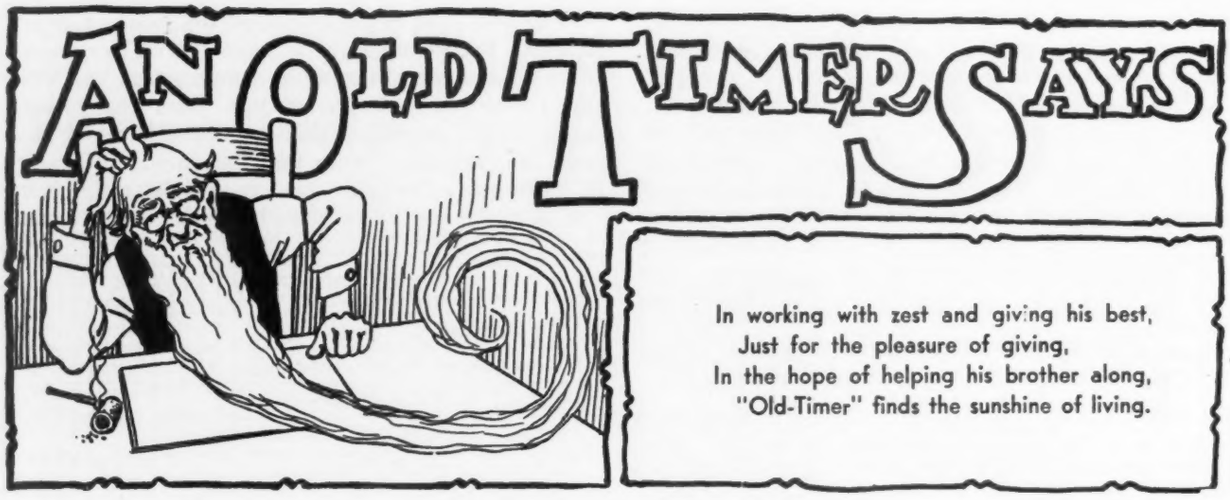
THE COMPASS OF INDUSTRY

COMPLETE TEXTILE MILL INSTRUMENTATION


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

The Story of Old Timer's Methods of Working and Management

Part Eighteen—Continued from December Issue

HERE Old-Timer continues his discussion with Jim of the best principles of working and management for the operating executive. Previous installments have brought them all the way through the mill, to the weave room, where we now find them; and Old-Timer has given Jim his own methods of keeping records, etc.

In this installment, he discusses particularly some of the duties of the overseer in making regular inspections, which he opened up in the last installment . . . . . .

(Note: Since this series is written in conversational style, it should be borne in mind that those paragraphs in regular type represent OLD-TIMER'S part of the conversation, and those in *italics* are JIM'S part.)

In speaking of the importance of walking the weavers' alleys, JIM, don't forget your crossed warps. Crossed warp, ends running over the harness, ends running around the loom, beams making laps, bobbins, pieces of leather, etc., put in the warps to separate crossed ends—these are the things which make a room look ragged as well as affecting the production. Therefore, you should, at least once a week, go over your warps. When you come to a warp with crossed ends call the weaver and have him straighten the ends while you are there, explaining to him that crossed ends will break oftener than straight ends, etc. It will not be long until you will have your weavers trained to keep their warps straight. Enter in your record book the date that you went over the warps and about once a month count the crossed ends you find in the whole room. You can do this by marking down on the scratch pad as you go along. Record the laps, ends over harnesses, etc., the same way and note the improvement in a few months.

It is also a good idea to use, as one of your special items about once a month, bobbins on the floor. Don't pick up every bobbin you find, but speak to the weaver, the fixer, the filling or quill man, in fact, make a specialty that day of talking to everybody about bobbins on the floor. If you visit any man's room and see a lot of bobbins on the floor you at once form a bad opinion of the overseer's neatness.

I was once talking to a mill president about going to work for him and one of the questions he asked me was: "Are you a good house-keeper?" When he saw I did not quite catch what he was driving at, he smiled and said: "What I mean is, do you keep your mill tidy and have a place for everything." That made an impression on me that I have never forgotten. He was not only interested in whether I knew mill machinery or not; whether I was a good manager of help or not; whether I knew how to make good yarn or not; but he wanted to know if I was a good house-keeper; whether or not I would keep his mill looking clean and orderly.

Say, brother, suppose you take a look at your work benches tomorrow. Do your sweepers know how to sweep?

Ha! Ha! Ha!

Shut up, you old fool, I thought you were asleep, anyway.

I was just about asleep, OLD-TIMER, *I'll admit, but that wonderful (?) question of yours would have waked me up if I had been chloroformed. "Do your sweepers know how to sweep?" Ha! Ha! Now you are sure telling us something about running a room. Go*

on, spill it. Give us some fine points on sweeping. Must the sweeper hold the broom this way, or that, shut one eye, stand erect, or what?

That's O. K., JIM. I did not really intend for you to take the question so seriously, but when you get through laughing so darn big, suppose you take a look at your sweepers tomorrow and see if any of them are pushing the waste out into the spare floor at the end of each alley and letting it stay there to be run over by boxes, loom beam trucks, etc., until they get all of the alleys swept. See if running over this waste doesn't mash some oily waste into the floor, making your scrubbing that much harder as well as making the floor look bad until the scrubber gets there.

See if his waste box is not sitting out on the spare floor or in the cross alley to be in the way of everybody as well as not dressing up your room by being out on the spare floor. Try having him keep his waste box pushed back into one of the loom back alleys and see if it does not look better. Notice the back girts on the looms where the warps are half out or smaller and see if they haven't got quite a bit of cotton and starch fly on them. Now instruct your sweeper to pass his broom over that back girt as he sweeps down the alley. Now look at that alley and look at another alley where he has not passed his broom over the back girts; see which one looks the best.

Oh well, OLD-TIMER, *that will do. I did not mean to get your dander up, but that question did sound rather foolish. However, I see your point and suppose there is something to learn, even about sweeping.*

O. K., JIM, forget it, but don't laugh so blamed quick, until you know what you are laughing at.

One other item I wish to mention is oiling. So many overseers leave the oiling to the second hand and the second hand leaves it to the oiler and oftentimes the oiler leaves it, too. That is, he lets the hard places to oil go too long without oil with the result that parts are worn out before Mr. Overseer or Second Hand wakes up to the fact, then they raise cain with the oiler, probably discharge him, when the oiler was really not to blame. It is the overseer's system which is to blame.

There has already appeared in COTTON a full description of a system which will certainly keep your oiling right before your eyes, so to speak, and also relieve that uneasy feeling as to whether the oiler is doing his work properly or not. Therefore, I will mention only briefly a few suggestions concerning the oiling. That is the system to enable you to keep up with your oiling.

Take a small blank book which is not too large for you or second hand to carry in the pocket. A small time book will be very good. Enter in this book first the items you wish oiled every day; then follow with others until you have all of the important items to be oiled, something like the accompanying illustration.

Have your oiler come to you at starting time and tell him the items you wish oiled on his first round. Mark those items in just like you would mark one of your day hands in.

Instruct the oiler to come back to you when he has made that round, then look over your book and lay out another round for him.

You will soon begin to realize the value of your oil book. For example, you will know about how many hours it takes your oiler to do certain jobs. You will have before you a picture of just when the rocker shafts or any other item has been oiled and you use your judgment as to when that item needs oil again. By looking at a few looms you can soon determine just how many days each item should go before oiling again

	M	T	W	T	F	S	M	T	W	T	F	S
Pick Cams	/	/	/	/	/	/	/	/	/	/	/	/
Harness Cams		/		/		/		/		/		/
Crank Shaft Boxes	/		/		/		/		/		/	
Cam Shaft Boxes		/			/			/			/	
Rocker Shaft Boxes				/								
Take up Roll Bearings							/					
Pick Shaft Boxes	/			/			/			/		

Sample page of record book . . . .

and you will find that one good oiler will do just about what you have two men on now. Or if you only have one oiler you will find that you can have him do some other jobs he has not been doing, because he certainly is going to have more time. You could probably have him wipe off your loom arches once a week or do some other job you have been paying another hand to do. Sometimes when you feel he has done an extra good day's work and he probably comes to you about an hour or two before stopping time asking what to oil next, tell him he has done a good day's work so he can go home.

You will soon have him interested in his work, because he sees you are appreciative when he does good work. Of course you must look at your looms to see that the items are being oiled often enough, and not too often, as too frequent oiling will get oil all over the loom parts, making them accumulate lint, which will become saturated with oil and be blown into your warps or on the cloth when the blow-off man (if you use one) is blowing off the looms. In other words, no system has ever been devised yet which will just run itself, that is, anything with which a human being is concerned. In fact, that is why *you* have a boss. You know, therefore, that no man under you will continue from day to day to do what he is told to do unless you check up on him.

(We must leave Old-Timer and Jim for this time. In the next installment, we feel sure, they will get into the cloth room in their trip through the mill. If you wish reprints of the previous installments in this series, let us know.—The Editor.)

If you are not man enough; not a good manager enough, to save part of your salary, what do you suppose your employer thinks about your ability to save for him when he is trusting you with thousands of dollars worth of supplies?

* * *

Can you take one of your employer's ideas and put it "across" like it was your own?

That is one of the things he is paying you for, you know.

George W. Robertson's Fiftieth Anniversary at Riverside and Dan River is Celebrated

(A record of fifty years of continuous service with one organization on the part of an operating executive is one seldom equalled and rarely, if ever, exceeded. George Robertson completed last month such a record with the Riverside and Dan River Cotton Mills—the largest mill organization in the South—of which he is vice president and general superintendent. The accompanying story of the celebration of Mr. Robertson's fiftieth anniversary is presented as a further tribute to a remarkable man and a remarkable record, in addition to the fitting ceremonies at Danville which are reported in it.—The Editor.)

MARKING the recognition of a term of fifty years of continuous service with the Riverside and Dan River Cotton Mills, of Danville, Va., by George Wilmoth Robertson, vice-president and general superintendent of the organization, officials and workers in the mills alike joined in a golden anniversary celebration tendered to Mr. Robertson and his wife, on Saturday night, January 20th.

The anniversary banquet was held in Hylton Hall, built by the company as a clubhouse and community building for the mills' workers, and 360 persons joined in a tribute of affection and admiration. It brought together those high and low in the organization—from the chairman of the board down to the humble sweeper and oiler who could boast of as much as 30 years of service in the mills.

The evening was marked by material tokens of appreciation. There was an illuminated scroll testifying to Mr. Robertson's long record of service, framed and done in mediaeval characters of red, gold and blue, offered by J. Hannon Schoolfield, of New York. There was a handsome beaten silver punch bowl and silver goblets, presented by J. E. Butterworth of Philadelphia on behalf of a group of salesmen; and there was the gift of Mr. Robertson's own people, presented by Herbert Martin, a member of the Danville organization. The latter was a touching tribute and Mr. Robertson, usually unemotional, and his wife beside him, were obviously touched when it was presented. It consisted of a bound testament containing the signatures of 7,616 names—the names of every person in the Dan River mill organization—literally a 100% sign up demonstrating friendship and good will. It included not only the names of the "help"—white and colored—but the members of the staffs of the organization's out-of-town offices. With it went a treasure chest containing 7,616 gleaming pennies—one from each of the signatories in the testament.

Resolutions adopted at the last meeting of the company's board of directors, demonstrating the high value placed on Mr. Robertson's capacity, his integrity and the human qualities which during fifty years have made "Uncle George" the friend and confidant of his workers, were read by John M. Miller, of Richmond, chairman of the board. A magnificent anniversary cake, sheafs of roses and other gifts were presented to Mrs. Robertson. At the conclusion of the banquet, a reception was held, and for more than two hours Mr. and Mrs. Robertson were shaking hands with men and women who run the looms grind the cards, run the slubbers, drawing frames and other machines of the mills.

More than 100 telegraphic congratulations reached Mr. Robertson on the day of the commemoration—they came from all over the country, from mill heads, presidents of supply firms and machinery builders. One was a cable, coming from Huddersfield, England.

Mr. Robertson's record is unusual. His superintendency came during what might be termed the expansive era in American textiles, or the period when it made its greatest progress, when it called for forward-looking men and capacity to meet a ravenous competition. The task demanded something of the character of the industrial diagnostician, the capacity to foresee public trends, to adopt changes in machinery, and the capacity also to meet a changing philosophy in the ranks of labor. To all of these things, Mr. Robertson gave himself with unselfish purpose and demonstrated the ability to maintain health despite the heavy and continual taxation on physical and mental resources.

Mr. Robertson

Traditionally, he was well fitted for the task, for he carried to Danville some of the rich background of his early days. He was born at Oldham, England, in the heart of the Lancashire textile district, in 1865, and came to America when he was five years old. He lived at Columbus, Ga.. until January 1884, when he moved to Danville to become overseer of weaving in the only textile mill that stood then in the Virginia city. It was the first root of what became the second largest textile plant in this country. Records of the Riverside and Dan River Mills show the sweeping progress made by the organization during the fifty years that Mr. Robertson has been identified with it. When he first started to work at Danville, the mill corporation had a total capitalization of $75,000. Today it is capitalized at $30,000,000. He has seen the number of spindles grow in the same period from 2,240 to 467,500; the looms, from 122 to 13,500; the employees from 134 to 7,600; the payroll from $425 to $103,000. He has seen new plants rise, has seen Dan River harnessed and smokestacks rise. He has seen a village become a town, and has watched the characteristics of the people change from one of extreme rural simplicity—since the first demand for labor was fed from the Virginia Blue Ridge—to a people more sophisticated in the ways of life. He has seen two major rises and falls in mass unrest. Through days of trouble, with outside influences disrupting a seemingly solid friendly relationship, through days of reduced demand, there has been no curbing of his spirit, no diminishing of his faith in the basic integrity of "Dan River" and its people. Then came the days of economic recovery, and with them enormous demands on executive ability. A huge industry had to be revamped without pause, schedules had to be changed, new workers taken on, and through it all the preservation of mechanical and human co-ordination.

Through all the labyrinth of changing conditions, George Robertson has threaded his way, moved by an ideal of faithful service.

Out-of-town guests at the banquet commemorating Mr. Robertson's golden anniversary with the organization included:

John M. Miller, Richmond; D. Van Wagenen, Charlottesville; W. J. Dorworth, Philadelphia; George W. Darby, Baltimore; Ralph M. Wyatt, Baltimore; Sidney S. Paine, Greensboro, N. C.; James Strang, Boston; E. E. Blake, Biddeford, Maine; H. A. Detwiler, Norristown, Pa.; Clifton E. Watson, Millbury, Mass.; Maurice W. Hambleton, Nashua, N. H.; Fred W. Howe, Worcester, Mass.; P. L. McMahon, Charlotte, N. C.; Ira L. Griffin, Charlotte, N. C.; Edward Johnson, Providence, R. I.; Frank W. Johnson, Charlotte, N. C.; Robert W. Glenn, Greensboro, N. C.; W. M. Hunt, Greensboro, N. C.; John L. Dabbs, Charlotte, N. C.; J. D. Sandridge, Greensboro, N. C.; Alexander West, Providence, R. I.; Philip C. Wentworth, Providence, R. I.; Paul Haddock, Charlotte, N. C.; J. Hannon Schoolfield, New York City; Walter Pratt, Charlotte, N. C.; Erwin N. Darrin, Spartanburg, S. C.; H. Lord, Boston, Mass.; Philip C. Brown, Dover, N. H.; James Cook, Providence, R. I.; C. H. Anthony, Hartford, Conn.; Harry C. Dick, Philadelphia, Pa.; S. B. Alexander, Charlotte, N. C.; J. E. Butterworth, Philadelphia, Pa.; George P. Ray, New York City; Alfred Cockefair, New York City; Lester Walls, New York City; Fred K. Nixon, New York City; Dennis Reardon, New York City, and John M. Hughlett, of Atlanta, Ga.

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HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers
On all varieties of Mill Subjects

An Overseer's Ideas on Maintenance Methods

EDITOR COTTON:

An overseer, being only a man and not a superhuman being, can only (safely) say what he would like to have done, and not say too much about it then. (All of which is said in a spirit of levity, even if it is so.)

The question of care and maintenance is of such proportions and is subjected to so many different ways of seeing it, that I hesitate to discuss it. I may be able, however, to draw upon my experience and lessons learned through observation and say some things which will be beneficial to those who are open minded to the other fellow's views.

To my mind, the question under consideration, boiled down to facts, would mean just two things proper—first, keeping the machine or other equipment in as good condition as it was when new, and, the second, which is a part of the first, giving the machine the care that is required to keep it in such condition. There is most positively a human element to be considered which will be discussed later in this article.

The Opening and Picking

Beginning with the department in which the cotton starts into the mill let us look at the opener room in all fairness. This is one of the most important units of the mill. Its care should incorporate cleanliness, safety, and the production of a stock that is manageable all the way through the mill. To do this, first, the foreman in charge of this department should know what is the proper care for each individual unit of the opening room equipment. For instance, there is a great deal of difference in properly caring for the vertical opener versus the horizontal type or the upstroke versus the downstroke type. The settings too are many and they vary in the same degree. As a general suggestion I would say that there should be a definite time for oiling shafting, bearings, ball bearings and the heavier types throughout the opening room—a score card should be kept which would carry the date for the next oiling as well as the present, with a column added for remarks as to the condition of the bearings.

The beater to bar settings should be checked often, as well as the percentage of droppings (motes, etc.,) from the different units. A system should be set up for the proper handling and mixing of the cotton as well as affording a positive method of checking the individual bale to the "last drop". Speeds should be maintained in proportion to quality and production.

The pickers are next. I heard a man say that anybody who could roll a "Georgia buggy" (wheel barrow) could run a picker room. He hasn't even a job rolling the buggy now. Pickers, when properly cared for, are one of the mill's best friends. They should never be over-worked, nor over-speeded, and should have only competent men to operate them. Their proper care would require daily cleanings outside, motes being removed before the box is full, screws kept free of congestion, oil at the proper time and in the correct amount, chokes removed from the rolls and grid bars, calender sections clean—and above all things, have the eveners kept just as sensitive as possible, especially remembering that positive knock-off controls give a positive yardage in laps that will reflect the working of the evener. Check up periodically on roll settings, beater to bar settings, condition of aprons, calender gears (for back lash, etc.,) balanced beaters and fans, condition of screens and housings, machine in line and level, and have all air leaks stopped. The oiling of heavy bearings in the picker room should be as suggested for the opener.

For both opening and picking, let me suggest putting on new parts—not patched or welded parts.

The Card

The next process is one of such great importance —though often it is disregarded and as often misrepresented—that I fear to mention it. I am afraid I would not make its importance definite enough. The card is supposed to do—and does when properly cared for and permitted to do so—its share of the

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THIS regular discussion department is abbreviated this month to provide space for the special general articles dealing with the theme of Modernization and Maintenance. These special contributions include the accompanying one from a regular contributor to "How Other Men Manage", presenting an overseer's thoughts on the subject. Next month the broad, extensive discussions will be resumed in this department . . . . . .

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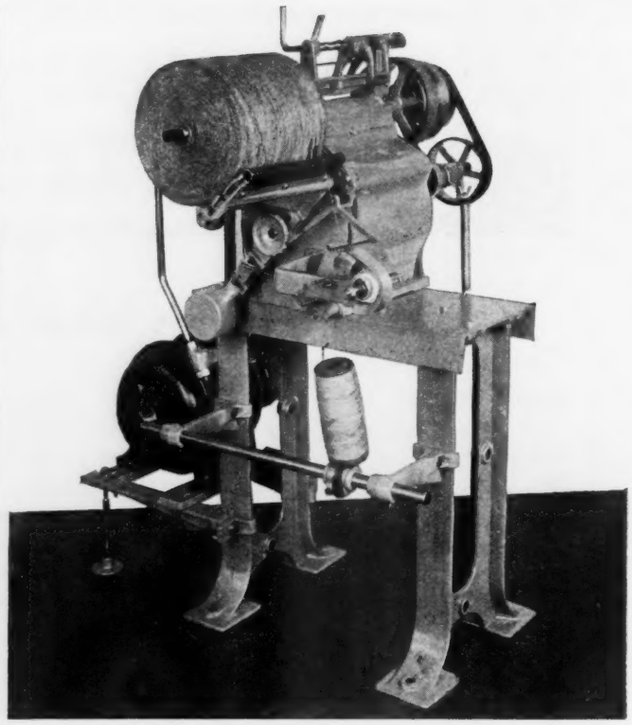

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work, straightening and paralleling as well as cleaning the staple. This machine can be made to weaken or strengthen the cotton, to make even work or allow it to go through in rolls and lumps.

The secret of good carding lies in the selection of settings and speeds and at the same time incorporates the grinding qualities. To suggest here a set-up would be very confusing because of the fact that so many mills represent so many different stocks, styles, types and local conditions; yet there are two things which should be universally accepted so far as settings are concerned. One is: The closer we set the card, the weaker we make our yarn. The other is: Ninety per cent of the fly waste is made (does not exist before the cotton reaches the card) by the way the feed plates, mote knives and back knife plate are set.

I know there are those who will disagree with me, yet I know because I have tried and tested to my satisfaction. One other point to this question is that the more fly waste the card "makes" the less foreign matter will be removed.

The care and maintenance of a card should include first of all a competent card grinder, not simply "a cheap man". Cards should be kept clean and well oiled, ground light and often, not overworked or over speeded. Good fillet should be put on and kept in good condition. As a general rule the cylinder should run at 168 r.p.m., the licker-in at 425 r.p.m., and the doffer from 7 to 10 r.p.m. Personally I know that heavy carding is all right because I have done it, and should anybody doubt it I'll be glad to give a set-up that will make 30s warp yarn break 60 pounds, made from Strict Low Middling cotton and a 70-grain card sliver.

Drawing Frames

Draw frames being next and of so little (?) importance, let me suggest the following: Clean the rolls each week, overhaul twice a year, use plenty of weights on rolls, check up on the draft, use oil freely and wisely, take out broken tooth gears, use only expert and trustworthy operatives, *keep* the draw frames clean, set the rolls properly, keep the tension slack, don't allow anybody who carries a pocket-knife to come within 10 feet of the rolls. Last but not least, don't run the front rolls faster than 250 r.p.m.

Roving and Spinning Frames

Fly frames can all be put in one class and spinning included, as the very nature of these frames run parallel except that the spinning puts in the final twist. The rolls on all these frames should be kept clean and properly oiled, spindles set, balanced and properly speeded, fanning off should not be permitted, proper twist and proper drafting should be adhered to strictly. Sensible speeds should prevail, and good well trained operatives should have charge of these frames. We might go further and say that of all the curses known to good manufacturing "stretch" has the day. Through fly frames, spinning, spooling, warping, winding and slashing, there is the ever present stretch, and with proper mechan-

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ical adjustment, most of it can be eliminated.

To cover all of these processes in a general way, I would say that a man who has practical training, plenty of sense, and a mechanical ability should have charge of these departments. That kind of man is coming to the front every day.

Weaving

Weaving is just one of those animals "what ain't" and yet the life of the mill depends upon it. However, so does the life of the weaving depend upon the thoroughness and accuracy of the preceding processes.

There is (I am told) an art in weaving, an art based upon having a good even yarn in the warp and another for the filling (just as good). Proper sizing of the warp is very essential to good running weaving and the weaver who has a good formula for size has a stock in his trade that carries him a long way up the ladder.

From my scant knowledge of weaving I would suggest that looms be kept lined and leveled with as much vibration eliminated as possible, operated at about 160 picks (E Model), using *original loom parts for repairs*, and having a loom fixer instead of a "farm hand" to keep them in repair—with take-up mechanisms, let-off, lay settings, harness settings, shuttles, friction (make up some more for yourself) set so as to give the most and best production with the least wear and tear.

Now, remembering that good running work affects the care and maintenance of the machinery, let's not forget that humidity has a great influence. Proper humidifying conditions are always worth what the cost was to secure them.

The Human Element

Now we come to the greatest proposition in the question of care and maintenance—that of the man, or the human relationship. Much has been said along these lines during the past few years, most of which no doubt is very good and sounds well when talking, but somebody tell me how much of it has actually been put into effect. We hear a fellow say that he believes in better living conditions, and elevated community life, and an educated community, and yet we can't hear what he says due to the fact that what he is actually doing makes too much noise. (You fellows know what I mean). It is just as impossible to make good work with a bunch of "growling Bolsheviks" as it is to make good work with a frame or a loom out of fix, and almost invariably you will find the Bolsheviks and the run-down machinery in the same mill.

It is true that there are exceptions to the rule, but the same influence that causes the run-down machinery usually creates the Bolshevik. My experience has been comparatively short, yet it has been varied, and I have studied the human element—from Georgia and the Carolinas on up through New York and as far as Pawtucket and Providence—I don't mean by correspondence either, it was in person, and I made a most startling discovery: People are just about the same regardless of their geographical loca-

The Story of Cotton

This is the sixth of a series of advertisements telling the story of cotton from its earliest cultivation in India and Peru to present times.

VI. REVOLUTION IN THE SOUTH

Before Eli Whitney by happy accident turned his inventive genius upon the problem of separating cotton seed from its tenacious lint, the agriculture of the South was gradually being weaned away from the immense one-crop plantations of the colonial era. The tobacco planters of Virginia were following the lead of George Washington toward more diversified farming methods, and the lands west of the Blue Ridge and the Alleghenies were being gradually occupied by pioneering small farmers who were forced by necessity to plant food and feed crops as well as crops for cash sale. Southerners were even beginning to protest to New England about the importation of more slaves from Africa.

Whitney's cotton gin reversed this trend toward small, diversified farms. The world was cotton hungry and willing to pay a handsome price for the commodity. The entire South turned toward cotton, and the effect upon the agricultural economics of the Southern States was revolutionary.

New lands were sought out for cotton raising. The Carolinas switched from rice to cotton; pioneers in Tennessee began to plant cotton on their farms; all the new states down the great river were settled by cotton planters; New Orleans, Savannah, Charleston, Mobile, grew rich in the service of the cotton planters; and far from decrying slavery, the cotton growing South asked for still more slaves.

In the short span of a few decades, the revolution was complete. The Southern States had firmly entrenched themselves as the world's greatest cotton producing section; the plantation system was an established order; and the development of other natural resources was forgotten in the effort to supply the hungry maw of the world's mills with cotton, cotton and still more cotton.

ANDERSON, CLAYTON & CO.

HOUSTON, ATLANTA, NEW ORLEANS, BOSTON, LOS ANGELES, CHARLOTTE, LITTLE ROCK, OKLAHOMA CITY, NEW YORK, MOBILE, MEMPHIS

tion. The operative who is good and knows it finds a place where he has the advantage of good, well kept machinery with which to work in order that he may uphold his reputation. The poor operative finds his level where for the "sake of economy" he is permitted to work regardless of his ability or character.

The best thing I could say about this human element in care and maintenance would be to those who are in authority: Remember that almost invariably the characteristics predominating in your superintendent, overseers and on down the line including fixers, will be reflected to the 'nth degree in your operatives. A cussing superintendent is reflected in the unmanageable doffer boy. Superintendents and overseers who are up-to-the-minute on improvements, who stand pat for character, promote good men, hire good help and let folks know what they stand for, usually get the element that they attract.

A True Story

As a point of illustration let me tell a story that is true. The man who told it to me is one whom we all know well, and know him to be absolutely truthful. When he was quite small he was "put" in the mill under an overseer who "cussed by note" and a superintendent who did not care what the overseers did to the help so long as they got off production and got it cheap. One day somebody broke a window pane and our young friend was asked if he knew about it or who did it and he said No. The overseer and superintendent made him sit down on a bale of cloth and about every 20 minutes they repeated the question and he gave the same answer. After a half day of this they sent him back to work and that afternoon the superintendent told the boy's father that he knew beyond a doubt that the boy had broken the window pane (which was absolutely false). That night the boy got a licking of 25 stripes from a hickory. The boy, resenting the injustice, went out that night and broke out 25 window panes on the back side of the mill. Two weeks later he was docked 30 cents and when he asked about it he was informed that it was for the time he was marked out on the day they "tried" him, so that night he went out and broke 30 additional window panes.

That was not the right spirit for the boy to have, yet it portrays the attitude of the average man. He does not expect to be imposed upon and intends to get even. You will agree with me without argument that the mill was the loser.

The man who told me this story is now superintendent of a large mill. He has a loyal community of loyal workers. Every man knows that he will get a square deal and that he must give a square deal. Those people would fight for this superintendent because they love him for his fairness. No, he is not a mollycoddle; he is a real he-man possessing an acute sense of justice toward his fellow man. He told me that the window pane incident in his life had taught him that it was vital to success for a man to play fair with his people.

In summary, in the care and maintenance, keep the plant and machinery in good condition, avoiding waste and extravagance, do away with obsolete machinery, improve the good machinery, repair and not patch, use oil in the bearings and not on the floor, eliminate useless operation and routes, improve yourself by reading, studying the trend of the times, the influence of changes, develop and manage the development of new ideas in your plant, appreciate and associate with the operatives on the play grounds, in the churches and in their affairs.

The more one knows about the man who works under his supervision the better he is able to get along with him, so an operating executive should interest himself in his operatives' world, know about their home life, their habits and their religion.

One might have to "lean over backwards" sometimes, but it won't hurt one's back and it might save his face.

CONTRIBUTOR NO. 6123.

'S. I. C." Explains His Fly Frame Problem

In response to "Wash", our North Carolina friend gives more details on the problem he submitted.

EDITOR COTTON:

I note on page 69 of the January issue that "WASH" promptly and courteously answered my question that appeared on page 73 of the November issue of COTTON.

I realize now that I asked an unfair question. It is a question with which no textbook deals and with which every practical man won't likely be confronted with in a life time of experience. However, I made the experiment with a fly frame that had been moved to a location where the overhead shaft and pulley were not right to give the proper speed, and failed to make the fly frame run two changes even after I had doubled the 18-tooth cone gear. I asked the question with the idea that perhaps someone else among COTTON'S readers had made a similar experiment and could tell me just what else I should have done to make a go of it.

To repeat the substance of the question:

"I desire to speed up a fly frame. I change the top cone gear that receives motion from the twist gear from a 48 to a 45 thereby causing the front roll to go 48/45 as fast as it did. Next, I change the gear on the jack shaft which drives the spindles from a 45 to a 48, thereby causing the spindles to go 48/45 as fast as they did. The front roll and the spindles have now been speeded the same amount and I have an 18-tooth bottom cone gear. What size bottom cone gear do I need to make the frame run? Is it practical to speed up fly frames in this manner?"

If only the top cone gear had been changed the top cone would have speeded the bottom cone and hence the bobbins the exact amount to have compensated for the front roll speed increase. This was precisely equivalent to changing the twist gear from a 45 to a 48, which change is a common practice. But to increase the spindles 6.6 per cent in addition to this, brings on more talk.

Take "WASH'S" own calculations on the question, as given in his letter on page 69 of the January issue. He assumes that the 48 top cone gear causes

the front roll to go 122 r.p.m. and that a change to a 45 top cone gear would thereafter increase the front roll speed to 130 r.p.m., and that a 45 tooth jack shaft gear caused the spindles to go 1,200 r.p.m. and a change to a 48 gear would cause the spindle speed to increase to 1,280 r.p.m.

The top cone changes the excess speed all right, the same as changing from a 45 to a 48 twist gear would have done, but what are we going to do about the flyer going around the bobbin 80 more times per minute? Won't the bobbin need to go 80 revolutions more? The bobbins must travel as fast as the spindles, and enough in excess of this speed to wind on the amount of roving delivered by the front roll.

If the speeds were right before the change, the speed of the spindles after the change would cause the 1 3/8-inch empty bobbin ordinarily used on a 7 x 3½ frame to get about 345.6 inches or 9.6 yards behind with its work each minute. There would be a slackening of 5.7 inches per second.

"WASH" failed to see why the cone gear should be changed to run the frame. Perhaps he had in mind some other change.

S. I. C. (N. C.)

Do You Put Tallow on Shuttles?

EDITOR COTTON:

We have been having some discussion here at the mill with reference to putting tallow on our shuttles. I would like very much to have from some of your readers their experience as to whether this has a harmful or helpful effect, with full details. I would like to know how often those using it apply it, how and where they apply it, and what benefits they feel are derived from this practice.

From those who do not use this practice, I would be glad to have their reasons why.

Any other information along this line would be appreciated.

CONTRIBUTOR NO. 6300.

Are Bottom Clearers on Fly Frames Beneficial?

EDITOR COTTON:

Here is a question I would like to see discussed thoroughly in the "HOW OTHER MEN MANAGE" department:

Do you think that bottom clearers on steel rolls of fly frames are essential or beneficial? I refer not only to slubbers, but to intermediates, speeders, and jacks as well. Some mills use them, others do not.

If you think it is better to allow this waste to fall to the roller beam to be wiped out at each doff, please state your reasons. Or, if you think it is better for this to be collected on the clearers and removed at different times during the day, thus possibly allowing some of the waste to run into the finished roving and be spun into the yarn, please state why.

I hope your readers will be thorough in their answers. I would particularly like to hear from "WASH".

J. R. (GA.)

Where the Job calls for FINE NON-GUMMING OIL — you'll find that 3-in-One not only meets the need satisfactorily, but actually provides far more equipment protection than you would expect from a light lubricant.

As it *lubricates*, 3-in-One keeps working parts *cleaner* and *prevents harmful rust.* Three-in-One's special blending from three fine oils guarantees this triple protection. Oils prepared less scientifically, or lacking any of the elements which make 3-in-One so efficient, can never equal its usefulness in the textile industry.

Write your supply house for gallon-can prices. Three-in-One Oil Co., New York.

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We have these advantages to recommend us.

One of the most modernly equipped and economical Units for manufacturing paint and varnish in the country.

Large enough to purchase crude materials in tankcars and carloads, with the technical and practical knowledge to assure uniformly good quality.

Small enough to avoid high overhead and excessive cost of distribution.

We will welcome the opportunity to quote you on our regular line, or any formulation you particularly favor.

Some of the largest plants in the South are our satisfied customers year after year.

GILMAN PAINT and VARNISH COMPANY

PAINT AND VARNISH MAKERS

CHATTANOOGA,

TENNESSEE

Overhauling Roving Frames

A mighty practical discussion by a southern operating executive on a vital subject . . . . .

EDITOR COTTON:

All of us overseers of carding have our ups and downs with roving machines, because so many mechanical problems enter into their operation that we are often confronted with the temptation to adopt the easiest way out of a difficult situation; and because we succeed for the moment in making a frame go we are inclined to pat ourselves on the back and let it go at that.

It is certainly strange how a roving frame will sometimes go for a long period and produce roving that will actually get accepted in the spinning room, until, one day, to the astonishment of everybody from the doffer to the overseer, it goes down, and when the fixer begins to investigate, he finds just about everything the matter from bottom to top, and probably an all-day job bringing it back.

We have our periodical overhaulings which are very essential and which will prove of vast benefit if they are properly managed. Every mill has one or more groups of frames of various ages of operation so that overhauling requirements will naturally vary. It is always advisable to overhaul as thoroughly as possible in every case, for the roving frame must be in the best of condition to produce good roving. No worn shafts, loose gears, lost motion, tight gear settings, spindles binding or out of plumb must be permitted.

A great many very fine points have been made in the pages of the "HOW OTHER MEN MANAGE" department relative to the operation of roving frames. It is very fortunate that we carders can have the privilege of exchanging views and lightening our burdens. As each of us has a situation peculiarly his own we can only hope to participate in the benefits that are most common, and that of course is where the discussion department becomes a great blessing. A large number of us, especially the more mature, do not always take advantage of the experience of others, being rather disposed to rely entirely on our own knowledge in the solution of our problems. He is most fortunate indeed who makes the journey of 25 or 30 years down the Carder's Highway without at some time feeling the need of a lift. It matters not how many days we spend with our roving frames, we can always find ways to improve them. We must be our own judge of what our overhauling program is and work it out to get the most work at the least cost.

These overhauling systems can often prove tremendously expensive and each of us must establish his own to the best advantage on all points.

Sometimes we like to do certain things because we saw someone else doing them some years ago, and the idea caught our fancy and so we proceeded to make it one of our regular habits—when if we would do a little serious thinking and use the talents we have had bestowed on us, it would take only a very short time to work out a much better system. Of course we all know that it is a hard job to get down to real serious

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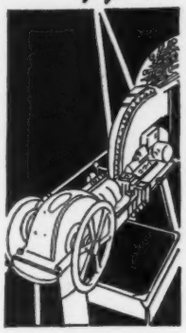
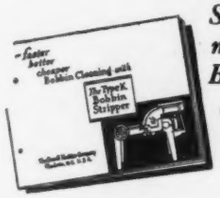
YEARLY BY REPLACING WITH

TYPE K *Bobbin Stripper*

One mill reduced its cost of stripping bobbins 46% by replacing 17 old model strippers with 13 Type K Machines . . . an annual saving of over $13,000.

Such savings are possible because Type K cleans so rapidly, at the rate of 100 to 120 bobbins per minute, with one operator—and so efficiently; the most tightly wound waste is easily stripped without injury to bobbins.





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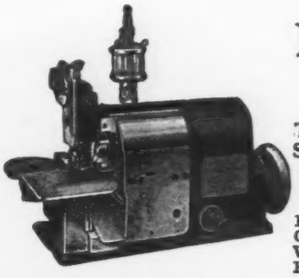

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PRODUCING A FLAT BUTTED SEAM (AS ILLUSTRATED BELOW) TO FACILITATE SUBSEQUENT PROCESSING OF TEXTILES

FINISHERS REPORT DEFINITE SAVINGS BOTH IN LABOR AND FABRIC. LET US DEMONSTRATE WORK OF THESE MACHINES ON YOUR OWN PRODUCT.

THE MERROW MACHINE COMPANY
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some of your machinery may prove an economical way to increased production

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With modern equipment, expert mechanics and 32 years of experience with all kinds of textile machinery and equipment, we have a service that cannot be duplicated. Satisfied customers from Massachusetts to Mississippi testify to the efficiency and economy we have effected in their equipment.

May we serve you? Detailed information gladly sent on request.

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A Means of Getting The Most Value From A Dollar's Worth Of Starch

Today, more than ever before, textile executives are investigating the latest improvements that are constantly being made in textile processes and equipment, as every improvement that can be made in their operating efficiency and quality of product, and any saving that can be made in manufacturing costs, means more profits.

The above booklet can be read in a few moments and with profit by every textile manufacturer interested in improving quality of his product and efficiency in warp dressing and finishing processes. It tells how to get the most value from a dollar's worth of starch, reduce operating costs in several ways, save time and trouble and increase the quality and appearance of textile products.

A copy will be sent without obligation to any textile executive. Ask for your copy today.

DRAKE CORPORATION, NORFOLK, VA.

• A R C Y •

thought, and many an otherwise good man has passed out of the game for no other reason than that he would not "burden" himself with real thinking.

After a job has been running along over a period of years, there are any number of little conditions that develop about a roving frame that become sadly in need of improvement, and careful intelligent overhauling will work wonders in bringing about a remedy. All of us have, or should have, our own outfit for overhauling, which must consist of everything necessary for doing a capable job. Unless this work is done in a strictly business-like manner and the proper personnel employed in the performance of all its various tasks, we fail to benefit by our efforts. It is folly to urge too much haste, for we cannot get good performance by so doing.

We should by all means be able to keep our frames in good running condition, what with our present day advantages, our machine shop facilities, we have little or no reason for not making the overhauling period an economical rather than an expensive one. By working along these lines we can make our frames produce even though they have seen many years of service.

We are entering a period which is going to call for a change of attitude toward every phase of our business and we owe our company our best efforts, and by adapting ourselves to the new times we shall be able to produce the results which our employers have a right to expect.

Our brother overseers—the spinners and weavers—can only produce yarn and cloth for coming markets of highest quality carding product and we must "back their play" when the game gets in full swing.

CONTRIBUTOR NO. 4774.

Criticizes "Wash's" Method of Questioning and Some of His Answers

EDITOR COTTON:

I have just read on page 67 of the November issue "WASH'S" rebuttal to "A. T. G.'s" August letter, and I have come to the conclusion that such scathing comments devoid of any true knowledge or help to our friends is absolutely uncalled for, especially the remarks against textile schools, where he claims several things are not taught. The textile schools of today are up-to-date in every phase of the mill game, and I am writing as one who went to night textile classes years ago; but I know the present status from reports and from what I see by the results attained.

First, let me say that "WASH" reminds me greatly of a type of correspondence school graduate, several of whom I have met in one or two mills; but they do not stay long, after it is known that they require their various pamphlets when some change or other has to be made in the organization or a layout. However, I am drifting away from my sole purpose of writing this letter in defense of our friend "A. T. G."

In the first paragraph of his letter on page 67 of November COTTON, "WASH" designates "A. T. G.'s" August letter as "empty and hollow", but I am sure "WASH" is wrong and he should review some of his own questions. Take for instance the picker question, namely: *"The breaker lap is larger in diameter at one end, although the lap rack and drafts are in perfect*

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Swift service means dollars saved when machinery breaks down. A few days' delay in getting repair parts can often mean serious losses. It pays to ship emergency items by Railway Express. That means transportation at passenger train speed, absolute safety in transit and rush service on arrival at destination.

Whatever you may require shipped in the nature of new supplies and parts for cotton, woolen, silk or rayon plants, you will find that Railway Express can serve you best. For the shipping of materials and manufactured goods, too, Railway Express applies speed, safety and dependability. We give a receipt on collection and take a receipt on delivery, and give liability up to $50 on each shipment.

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Production per hour
at individual loom
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PICK COUNTERS
give you these figures to *test for profit* at each individual loom.

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BOILER EFFICIENCY

is just as important as Loom Efficiency in Reducing Manufacturing Costs!!!

Maintaining economical production of looms and other textile machinery is necessary, but don't forget the boiler room—coal costs money and boiler shut-downs, repairs and replacements cost more money. Keep the scale out of the boiler and you not only cut your coal bills, but save your boiler from corrosion and pitting that dangerously weakens the boiler and results in repairs and replacements.

The logical, easiest, most thorough as well as most economical method of eliminating boiler scale is BROOKS Improved Boiler Metal Treatment. It not only eliminates scale without shutting down the boiler, but it *keeps it out*, and protects the boiler metal against pitting and corroding. It does not impart any odor to steam to interfere with processes using live steam.

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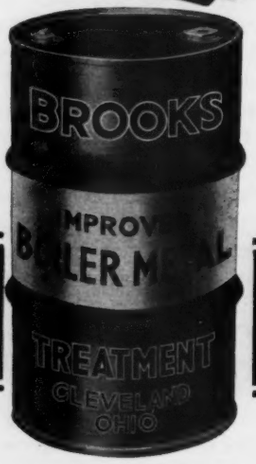

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condition (Note that statement). *What causes the diameter of the lap to be larger on one end?"* This, according to "WASH", was just a trick question, because he states in another paragraph that any active mind would know that the trouble was in the back of the picker. Where, may I ask? If the drafts are correct and the stock is blown evenly onto the screen and the lap racks are perfect, the lap will also be even at both ends. Isn't that logic? Now, I hope "WASH" will tell us about the trouble at the back of the picker and also define his questions thoroughly as to the kind of picker, etc. Then probably even textile graduates will answer correctly.

In one paragraph of his November letter, "WASH" makes reference to the suggestion of "A. T. G." that he (WASH) should be made the Czar of textiles. From what I gather it seems to me that he should be elected the "Baron Munchausen"—with all due respect to our radio mirth maker.

With reference to the third question given by "WASH", which remains unanswered by himself unless he means to infer that his slight roll setting will eliminate the trouble of varying tension of the webs. The question as stated by "WASH" is as follows:

"On the drawing frames some days we have a tight web between the front roll and the calender rolls. The next day they run slack. What causes this?"

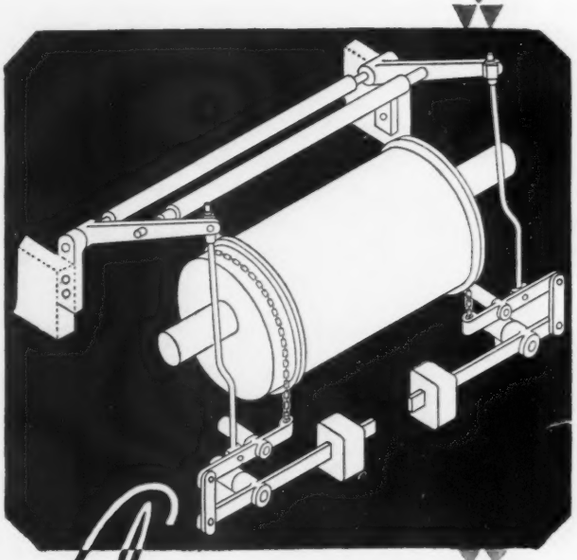
I wonder. Well, I have seen this occurrence in small card rooms where neglect of proper temperature has prevailed, but in properly equipped and operated rooms this trouble is never known, and if card slivers are presented to the drawings in the correct condition and atmospheric conditions are controlled in the room, the tension of the webs will vary very little indeed.

But here is the point which interests me most in this matter: "WASH" says he realizes that a one-tooth change of the "calender roll pinion" (I take it that he means the tension gear) is too great in most cases. So to avoid a change of one tooth of tension he simply closes the rolls slightly—the drawing or drafting rolls, I presume, which I do not know, but probably he means all of them.

Again, the appearance of a hollow statement, and our friend assumes the role of chief advisor on textiles. But of course this procedure is termed the "art of drafting" and, according to "WASH", is not taught in textile schools. I am inclined to think that the idea must be a new art of drafting never before attempted by practical men, let alone textile graduates, but I am also sure that it is a wrong and a slipshod way of overcoming the trouble.

If one tooth of tension is too great a change in most cases, then "WASH" should know that the tension does not require any change; neither does any frictional contact, as he terms it, need to be increased.

I would like very much to see "WASH" or anyone else try his method in mills where the art of drafting is practiced in the true sense of the word. The tension gear on a draw frame is there for a definite purpose, as is also the draft gear, and should be used to any advantage which they provide. Frictional contact plays no part whatever in tension at the points mentioned. "A. T. G." has explained what happens, therefore, I do not have to repeat it.



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(Hughes Patent 1,698,913)
Others pending

A simple scientific device which automatically keeps the tension of the warp constantly uniform, regardless of whether it is a full or almost an empty warp beam, thereby eliminating troubles that are experienced at present on most looms.

The cost is most reasonable.

The results very productive.

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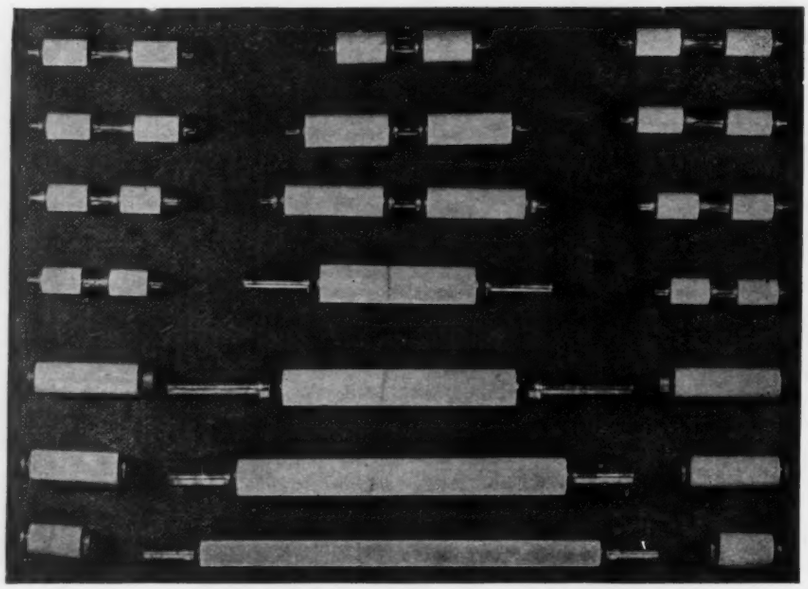

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Philadelphia specializes in Stamping Blankets, Palmer and Sanforizing Blankets for Finishing, and Lapping Cloths for Printing.

Our Southern Sales Manager, Clarence B. Seal, will gladly assist you on felt cloth problems. Address inquiries to Philadelphia.

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FRANKFORD, PHILADELPHIA, PA.

Philadelphia *Felt Cloths*

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WAK Double Pick Counter installed on Draper Model E Loom

So many prominent and successful mills use WAK Counters that a complete list looks like a "Who's Who" of the Textile Industry.

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WAK Counters are furnished in many styles,—single, double, resetting, non-resetting Pick Counters, Double Wheel Yardage Counters, Full Fashion Course Counters, Ratchet Counters, etc.

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WAK INCORPORATED
CHARLOTTE, N.C.

Birmingham, Office:
408 N. 23rd St.

W. A. Kennedy, Pres.

"You Can Count on WAK Counters"

In one portion of his November letter, our friend "WASH" contradicts himself in telling us that the figured draft of any machine is never attained, still he gives figures to prove that the draft between the front rolls and calender rolls of a draw frame is less than 1.00. How come, "WASH", that you know that the actual draft is that of the proportionate amount of friction between the top and bottom rolls, and why give us the gears to figure the draft and prove that it is less than 1.00? Of course, using "WASH'S" own words: "The figures in such a case prove that I do no bluffing".

But, on reviewing the gears given by "WASH", I find that the calender pinion is probably the smallest used, if ever used, under ordinary conditions. He gives this gear as having only 30 teeth, whereas I think if he would increase that to 31 or 32 for leather rolls he would probably find his draft, as figured by gearing, would be over 1.00, but if actual conditions force him to use the 30-tooth gear, I must say he is running a very, very light sliver. However, if figuring this draft by gearing is wrong, so also is "WASH'S" idea of frictional contact, but in this case I will stick to the gearing, and also have my webs just right with that slight draft which, by the way, must be a continual slight draft, so why, as stated by "WASH", should we get uneven work?

To prove that there is a draft at this point "WASH" should size his drawing sliver. Then change the tension gear either way to slacken or tighten the webs, and then size again; after which he will surely see a difference. There will not be any bluffing in the matter because it speaks for itself, and "WASH'S" theory will prove to be a "wash-out". Does our friend really know how a web from the front drawing rolls to the calenders should run? He should know that the only "sagging" required should appear in the center, barely one-inch below the main body of the web and, to obtain this correct result, he will have to run gears suitable and a tension which will give him a slight draft not less, but over 1.00. He should also know when he mentions that the figured draft of any machine is never attained, that it is such small drafts as these tension drafts which cause the aforementioned belief, because they are never taken into consideration. Nevertheless, they are in existence.

On some draw frames there are two tension drafts, one in addition to the draft between the front rolls and the calender rolls; namely, from the preventer roll to the back roll. Very slight, still they exist.

In conclusion, I must commend "A. T. G." for his own article in the November issue, page 71, as a direct answer to "WASH'S" July questions, but it is regrettable to learn that he intends to give up the struggle, which of course is his own business; but I would urge him to continue in defense of textile graduates and if possible upset the biased opinions of "WASH". I would also urge "WASH" to eliminate the tricky business and let us have facts. This department is not a guessing section, but one which will give us information as to how the other fellow manages.

E. D. (R. I.)

HOT LUNCHES AND COLD DRINKS

WITHOUT WASTE OF EMPLOYEES' TIME

The health, efficiency and good-will of your employees are increased by having available a refreshing hot lunch or cold drink. You can now offer them this service right at their machines, saving the tremendous loss in time and profits through employees strolling to and from concession stands.

WRIGHT COLD DRINK AND FOOD CART

Scientifically designed, insulated and ventilated, this cafeteria on wheels is the result of many years' experience.

One compartment is heated for weiners and hamburgers and other hot sandwiches, while another is kept cold with room for 400 bottles. All is electrically operated. Each compartment will retain its temperature for several hours. An occasional plugging into the electrical circuit, when not making a trip through the mill, is all that is necessary.

There is space for pies, gum, tobacco and other sundries in the shatter-proof glass display case. Can be handled with utmost ease, even in very narrow alleys. Will last indefinitely.

A few of the many users are:

ARAGON-BALDWIN COTTON MILLS
BEMIS BROS. BAG COMPANY
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DIXIE MERCERIZING COMPANY
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There is a model to suit the requirements of your mill
Write for descriptive data and prices.

WRIGHT COMPANY
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A New Silk Throwing Service for the South

Here is the plant the South has been waiting for—a throwing plant with modern machinery ample to accommodate the South's largest mills—the largest commission throwing production in the South.

Consider the location of this plant to your mill and to the rayon producing plants in the South—overnight service to practically every weaving mill in the South by motor truck with daily service from Augusta—48 hour service by two steamship lines with daily shipments from New York.

Throwing service on rayon, silk and Tussah—Organzine, Tram and Crepe—in all combinations and twists—on Skeins, Bobbins, Cops and Cones, unqualifiedly guaranteed against throwing defects.

The management of this mill has a background of 30 years experience in the Pennsylvania territory. No detail from any angle has been overlooked to give you the best throwing service.

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COMMISSION THROWSTERS

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Southern Representative
ROBERT BAKER
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ANTHRACITE SILK THROWING CO.
WYOMING, PENNA.

Then and Now—an Interpretive Review

(Continued from page 76)

This does not mean stagnation in the industry; it does not mean that there can be no replacement or improvement in productive machinery already in place; it does not mean that the doors are closed to any balancing processes that may be desired, because such legitimate requests are given serious consideration. The purpose of this regulation is to allow the already existing legitimate capital investment in the textile industry to rehabilitate itself on sound, economic principles and to protect it when its efforts have been successful. This is a recognition of a social and economic principle that the welfare of an industry is social and economic in its broad application. Its success or its failure influences national life. Since this is the case, under the present plans of recovery, the Cotton Textile Industry Committee, co-operating with the recovery administration, is the final authority to decide upon matters of this nature.

In the discussion of the new principles that are governing the industry, a close co-operation is indicated, which to some might seem a foreboding threat of conditions which obtained prior to the passage of the anti-trust laws, but the government and labor and the public have representative committees to censor all acts provided for under the code, and the recovery administration specifically states that the industry shall do nothing that promotes monopolies or tends toward monopolistic practices.

Everything that has been done thus far has tended toward re-employing people on a reasonable social and industrial plan; rehabilitating the capitalistic structure in such a way that the managers may operate with intelligence and financial security, and that the public may be able to purchase the products of labor and capital at a fair and just price.

To endeavor to go into detail concerning the many benefits of the new deal in the cotton textile industry would make the story too long, hence, only the high lights can be touched. It is safe to say that, throwing all of the problems of the industry North and South, large and small, rural and urban, into one common source for discussion and solution—much of the suspicion and industrial ill-will which existed in certain places has been removed. With confidence there comes co-operation and with co-operation—which in this instance is intelligent—improvement and final success are assured.

Up to the present time the working of the code committee has been confined chiefly to the improvement of employment and manufacturing conditions. Very little study has been given to the subject of distribution or merchandising thus far. It is quite likely that during the year 1934, this subject will be given very serious consideration and many of the traditional principles which have been outmoded will be discarded.

When the cotton textile industry began its clearing house and industrial codification, it began work

Cleaner and More Even Yarn From Your Spinning Frames

Liquid oils drip and leak from bearings and necks of rolls. They fail to control friction effectively and so do not prevent wear which causes bearings to get out of alignment.

NON-FLUID OIL, made adhesive by a special process, "stays put" in bearings and prevents the frictional wear that causes misalignment — thus it insures production of even yarn.

Since NON-FLUID OIL does not creep from roll necks and spread onto the face of rolls its use does away with oil-stained yarn. For the same reason NON-FLUID Oil outlasts liquid oil 3 to 5 times, saving money on both the lubricant cost and the cost of application.

Write today for free testing sample and bulletin, "Lubrication of Textile Machinery."

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NON-FLUID OIL
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MODERN TEXTILE LUBRICANT

Better Lubrication at Less Cost per Month

AKRON LEATHER BELTING

THE AKRON BELTING CO. CASCADE AKRON, OHIO, U.S.A.

FULL STRENGTH

Specially fitted for all mill drives. It produces results and it is RESULTS you are looking for.

SPIN TWIST=Full Speed---all day, every day on spinning frames and twisters.

CASCADE Loom Belt=more picks per minute--- no break downs.

"NORKA"

THE AKRON BELTING COMPANY, AKRON, O., U. S. A.

Makers of Quality Belting since 1885

THE AKRON BELTING CO. SPIN-TWIST AKRON, OHIO

FULL THICKNESS

THE AKRON BELTING CO. ESTABLISHED "AKRON" 1885 AKRON, OHIO, U.S.A.

FOR LASTING BEARING ECONOMY AND LESS SHUT-DOWN EXPENSE . .

Easy to install and maintain, Moccasin Oil Distributing Bushings are today the only type that are successfully replacing ball and roller bearings where speed and heavy duty are factors. Made only of the purest copper and other metals into a bronze possessing great anti-frictional properties—yet tough enough for years of wear.

Capillary feeders place an unbroken film of oil, free from abrasives, on the bearing surface. Positive assurance against oil drippage. These bushings require a minimum of attention, running from two to six months on one filling of reservoir. Absolutely guaranteed as to performance. Standard equipment on many textile machines.

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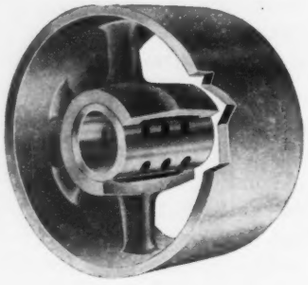
Brass and Bronze Castings of Every Description



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SIZING FINISHING

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SCIENTIFICALLY PREPARED TEXTILE CHEMICALS

A CONCERN IS KNOWN BY THE CUSTOMERS IT KEEPS—

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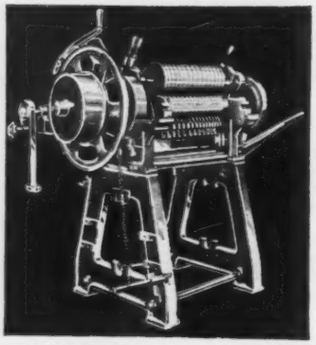

CAMACHINES

slit and rewind rolls of fabric, rubber, paper, etc., at high speed.

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Pays Twice Its Cost

A Loper contract contains the guarantee that its service will pay you at least twice the amount it costs you.

Let us give you references that prove we accomplish even more than we guarantee.

Fully 25% of All Cotton Textile Spindles in the U. S. are operated on the Loper System.

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INDUSTRIAL ENGINEERS

Specialists in Textile Cost Methods Over 21 Years.

FALL RIVER, MASS. GREENVILLE, S. C.

solely with the spinning and weaving industry. As the discussions proceeded, far reaching, interlocking influences were discovered, and so other branches of the industry asked to come under the supervision of Code No. 1. Among these are the Cotton Textile Merchants Association of New York, the Converters and Finishers Association, manufacturers of woven rayon fabrics, manufacturers engaged in the weaving of cotton and/or rayon or other synthetic fibers, manufacturers of sewing, crochet, embroidery and/or darning cotton thread.

That Frightful Monster: Government Control

The "frightful monster" of government control which frightened so many in the early days has proven itself to be a rather tractable, reasonable animal. Insofar as the cotton textile industry is concerned, the government has kept faith in its statements that government had no desire to rule, or control industry, but to assist industrial management in discovering the sanest and most fundamental plans for operation. The code is not perfect, nor is it final. In a growing world, such a structure is impossible. It may not be the best that could be devised, but it is the best that could be devised under present conditions and with present information. It may have worked hardships upon some member of some group. It would be indeed difficult to devise a plan so extensive in its scope which would not do this.

Rugged individualism, in its sound and economic phases, has not been killed, nor has it been crippled. There are certain general basic principles of progress that must be observed. Engineering ability, business acumen, managerial efficiency, still live and have a vital place in the industry. Business men must realize and appreciate that, in addition to the responsibilities which they have toward their stock holders and to their immediate community, there are certain wider and commanding relationships owed to the industry as a whole and to the nation. A new day of pioneering in a new field is at hand. The cotton textile industry is realizing this and is making its preparation to enter this field with courage and confidence, hope and enthusiasm.

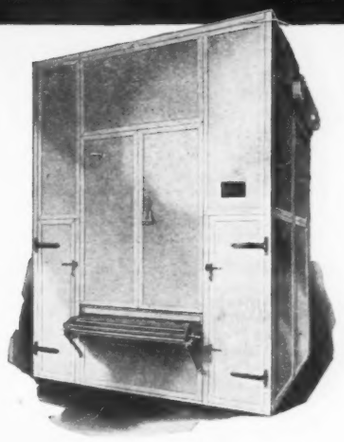
It cannot fail because confidence is a common factor in the industry; in the discussion of the problems, many have been found to be industry-wide and soluble only by co-operation. Employment contions are much improved and wage scales are understandable and comparable; labor troubles have a clearing house which seems to be able to function satisfactorily for both employers and employees.

Production control is a fact and not a theory. Stocks on hand in mills are not a depressing factor; cost accounting has greatly improved; mill statements are changing from losses to gain; merchandising methods are improving.

In short, intelligence has supplanted ignorance; confidence has driven out fear, faith has displaced doubt; work has replaced waiting.

The cotton textile industry has put or is putting its house in order and this generation expects to keep it so.

MULTIPASS
AIR-LAY



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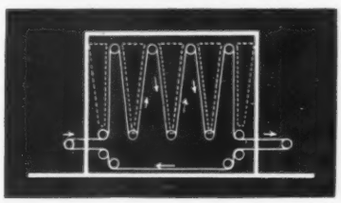
Proctor principle of drying piece goods

FOR dyed, finished or printed piece goods of all kinds . . . also other continuous sheet, web, strip or string materials . . . washed, coated, impregnated, etc.

Operation is simplicity itself . . . no rollers, guides, clamps, festoons or leaders. Drying is speedy and uniform. Nothing but air touches upper face of material . . . no tension, thus allowing full shrinkage or crepe effect. Extremely compactness, saving floor space.

Our new Bulletin No. 68 will acquaint you with this newest of piece goods dryers. Write for your copy.



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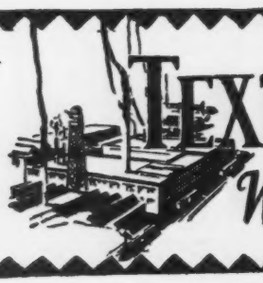

TEXTILE BOOKLETS *Worth Writing For!*

The booklets or catalogs briefly mentioned below may be obtained by any readers of COTTON who will write to the Company issuing them or to COTTON, Grant Bldg., Atlanta, Ga.

2. **Pepperell Equipment**—10 page illustrated booklet showing High Speed Warping from cones as adopted by Pepperell Manufacturing Company after thorough experiments, installation and product photographs. Issued by Universal Winding Company, Boston, Mass.

10. **Leathers, Textile**—Booklet No. 101, 48 pages, illustrated. Showing "Bondaron" Check Straps—Lug Straps—Harness Straps—Pickers—Belting, both round and flat, etc. Horsepower tables and other interesting information. By Charles Bond Company, 617 Arch Street, Philadelphia, Pa.

11. **Whitinsville Rings**—16 page illustrated booklet. describing ring manufacture, measurements, types, uses. How to determine flange sizes. By Whitinsville Spinning Ring Co., Whitinsville, Mass.

15. **The Powers System of Thermostatic Control**—"Slasher room is Bottle-Neck of Textile Mill." 18 page illustrated booklet showing importance of proper treatment of cloth in slasher room and advantages of Thermostat over hand control. Also room temperature control illustrations. Issued by Powers Regulator Co., 2739 Greenview Ave., Chicago, Ill.

21. **Warp Sizing and Composition of Cotton**—Folder containing reprints of articles carried by textile publications of interest to progressive mill superintendents. By Seydel-Wooley Co., 748 Rice St., Atlanta, Ga.

25. **"Lupogum" and "Monopole Oil"**—Two booklets on textile sizing and finishing products. Jacques Wolf & Company, Passaic, N. J.

28. **Akron Belting**—Practical Rules and general information for users of belting with belting catalog. By Akron Belting Co., Akron, Ohio.

29. **Continuous Card Stripper**—A 20 page booklet describing in detail continuous card strippers, their advantages, the power required to operate, etc. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

30. **Lubrication of Textile Machinery**—32 pages, illustrated. Data covering the economical lubrication of all textile machines. New York & New Jersey Lubricant Co., 292 Madison Ave., New York, N. Y.

38. **Sleaziness in Full Fashioned Knitting**—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog for Reading full fashioned machines with general information on subject of full fashioned knitting.)

59. **Vat Colors and Their Oxidation**—A revised edition giving information and methods of the dyeing, printing and Perborate of Peroxide "fixation" of vat colors. R. & H. Chemicals Dept., E. I. duPont de Nemours & Co., Wilmington, Del.

62. **Rubber Products for the Textile Industry**—A 40 page booklet giving a wealth of information on the proper selection, installation and operation of rubber belts, together with charts showing horsepower rating, pulley sizes, V-belt sizes, also information on all types of hose and rubber covered rolls used in the textile industry. Manhattan Rubber Mfg. Division of Raybestos-Manhattan Inc., Passaic, N. J.

63. **S-W Paint Standardization Plan**—valuable booklet telling how protective coatings can effect economies in plant operation and maintenance, describing how each surface is finished to best meet its specific needs, giving ideal lighting and sanitary conditions and economies in increased production. Sherwin-Williams Co., 601 Canal Rd., Cleveland, Ohio.

64. **Efficiency and Performance of SKF Roller Bearing Spindles**—A twelve page booklet showing the advantages in power consumption, increased production, savings in lubrication, increased yarn breakage strength to be secured through roller bearing spindles. SKF Industries, Inc., Front St. and Erie Ave., New York, N. Y.

65. **Why Cooper Hewitt Light is Better Than Daylight**—A 16 page booklet explaining in detail the importance of good lighting and the necessity of proper quality as well as proper quantity of light. General Elec. Vapor Lamp Co., Hoboken, N. J.

66. **Dronsfield's Patent Portable Auto-Feed Needle Point Grinder No. 176**—describing a new departure in card grinding—John Hetherington & Sons, Inc., 250 Devonshire St., Boston, Mass.

69. **Monel Metal Equipment for the Textile Industry**—A 50-page buyer's guide and catalog with more than 100 illustrations of various items of monel metal dyehouse equipment. International Nickel Company, Inc., 67 Wall St., New York, N. Y.

70. **Fafnir Ball Bearings for One Process Pickers**—outlining the advantages of ball bearings in guaranteeing smooth, accurate motion, particularly on eveners, as well as uninterrupted production, ease of operation and cleanliness of bearing units throughout the one-process pickers. Fafnir Bearing Company, New Britain, Conn.

72. **The Merrow Butted Seam**—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in textile fabrics. The Merrow Machine Co., Hartford, Conn.

73. **New Reeves Catalog No. 99**—a treatise on efficiency speed control—including valuable information of special importance to textile industry men and production executives outlining advanced methods of speed regulation. Reeves Pulley Company, Columbus, Indiana.

75. **The Facts About Armstrong's Seamless Cork Cots**—A helpful book containing plain facts, cost studies based on actual mill records, expert analysis, complete details on the advantages of Armstrong's Seamless Cork Cots. Armstrong Cork & Insulation Co., 923 Arch Street, Lancaster, Pa.

78. **Booklet L 1289 A—Loom Motors and Control**—giving details of the low installation, operating and maintenance cost of Westinghouse Loom Motors. Westinghouse Electric & Manufacturing Company, Room 2 N, East Pittsburgh, Pa.

88. **Dayton Cog Belt Catalog**—A 32 page booklet full of vital information on power drives, plainly and simply assembled and arranged so that anyone can select the proper standard drive for any condition. It also provides data for the calculation of drives where acquired. The Dayton Rubber Mfg. Co., Dept., C-11, Dayton, Ohio.

90. **Atwood Booklet**—Describing Atwood Winders, twisters, wire swifts, and various types of feed rolls—useful to throwsters interested in learning the principal features of various Atwood machines. Atwood Machine Co., Stonington, Conn.

92. **Silicates of Soda**—A review of the properties of silicates of soda and their various uses. Philadelphia, Quartz Co., 121 S. Third St., Philadelphia, Pa.

95. **Onyx Processing and Finishing Compound Catalog**—A thirty-two page booklet listing and describing entire line of processing and finishing compounds, covering every process on all types of fabric. Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City, N. J.

97. **Suggestions For The Modern Silk and Rayon Throwster**—describing the various uses for Laurel Brand Products and giving valuable suggestions in silk-soaking, degumming, dyeing, sizing and finishing. Laurel Soap Mfg. Co., Inc., 2600 East Tioga St., Philadelphia, Pa.

101. **Bulletin No. 169-1, Recording Thermometers.** 48 page booklet describing and illustrating how the installation of proper instruments will result in worth-while savings. Foxboro Co., Foxboro, Mass.

102. **White and Light Shade Cotton Fabrics Dyeing and Finishing**—National Oil Products Co., Harrison, N. J.

103. **Throwing Rayon Crepe**—National Oil Products Co., Harrison, N. J.

106. **Cotton System Warp Sizing on Multiple Cylinder Machines**—a folder showing the advantages of this type of machine in making warps of acetate and other synthetic yarns and spun silk—Charles B. Johnson, Paterson, N. J.

107. **Complete Information on Alemite Lubrication.** Showing how costs can be reduced through proper lubrication. Alemite Corp., 1828 Diversey Blvd., Chicago, Ill.

109. **Some Properties of Starch and Dextrine**—Explaining certain fundamental properties of starch and its derivatives and their action when heated and agitated. Stein, Hall & Co., Inc., 285 Madison Ave., New York City, N. Y.

110. **3-In-One for Industrial Uses**—showing the many industrial uses and advantages of this oil. Three-In-One Oil Co., 70 Varick St., New York, N. Y.

113. **Card Room Testing Equipment**—describing the advantages gained by having the product of the card room machinery tested in the same way as the yarn is tested in the spinning room. The Belger Co., 36 Pleasant St., Watertown, Mass.

114. **Denman Parts for All Makes of Looms**—showing drawings and dimensions of Denman pickers, hold-ups, bumpers, and bunters made of fabric and vulcanized rubber. Denman Tire & Rubber Co., Warren, Ohio.

115. **How to Cut Cloth Room Costs with Automatic Picking Machines and Improved Inspecting Machines**—Hermas Machine Company, Walburton Ave., Hawthorne, N. J.

116. **Arcy**—Telling in an interesting way the story of Arcy, which completely liquefies ordinary thick boiling pearl starch, and its many advantages. Drake Corporation, Norfolk, Va.

117. **Anti-Friction Bearings as Applied to Spinning, Drawing and Twisting Frames**—This bulletin shows with detailed drawings how a simplified design of roller bearing applications is made to replace the plain babbitt bearings and lists the advantages that are gained. It deals primarily with better continuous production and in consequence freedom from equipment care and repairs. Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.

118. **Cotton Picking, Opening and Cleaning Machinery, Cards, Combers, Roving, Drawing, Spinning, Twisting, Rings, Worsted Machinery and Woolen Machinery**—Pamphlets are issued on each of the individual machines. Will be sent to subscribers who make requests on the letterhead of the mill and indicate special pamphlets desired. Whitin Machine Works, Whitinsville, Mass.

119. **The World's Finest Sewing Machines**—a condensed catalog giving details of the various Willcox & Gibbs sewing machines. Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York, N. Y.

120. **Goodyear Mechanical Rubber Goods Catalog**—40 page catalog giving practical information and tables helpful in the selection of the proper belting, hose or packing to suit the requirements of the mill. Goodyear Tire & Rubber Co., Akron, Ohio.

121. **Engineered Packages for the Textile, Dry-Goods and Apparel Industries**—Showing the savings to be made through the use of properly engineered packages of corrugated fibre in the shipping of yarn, woven and knitted products. Hinde & Dauch Paper Co., Sandusky, Ohio.

122. **Water Filters and Filtration Equipment**—Containing complete description of the chemical processes involved in the coagulation and precipitation of foreign matter, the removal of iron, oil, manganese from water and the production of clean water suitable for the textile industry, together with tables of specifications for standard filters, and information showing the extra profits to be made by the mill through reduction in costs and process difficulties, through removal of undesirable impurities in water. Permutit Company, 330 W. 42nd Street, New York, N. Y.

123. **An Outline of History for Anti-Friction Bearings**—a treatise outlining the development of anti-friction bearings from their earliest appearance in history to their present important position in industry. Fafnir Bearing Company, New Britain, Conn.

124. **New Condensed Catalog on Ball Bearings and Power Transmission Units**—Combines all of the information and the industrial uses of radial ball bearings as well as the Fafnir power transmission line of wide inner ring and ball bearings. It gives complete information, interchangeability tables, dimensions, prices, etc. Fafnir Bearing Company, New Britain, Conn.

125. **More Light with Lasting Cleanliness**—a booklet pointing out the many advantages of white paint and the qualities to be looked for to get the greatest value in such paint. U. S. Gutta Percha Paint Company, Providence, R. I.

126. **Improved Lucas Underclearer Rolls**—giving details of the many advantages of this roll for spinning frames, mule frames and roving frames. L. M. Hartson Company, North Windham, Conn.

127. **Interesting Facts About Schaaf Greaseless Bar Ring Travelers for Silk and Rayon Drawing and Twisting**—describing in detail these travelers, instructions for installation and their advantages. L. M. Hartson Company, North Windham, Conn.

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Real profits

. . . IN THIS BETTER HOSE MADE ON THE "K" GUSSETOE SPIRAL MACHINE

Sheer, Even in texture, Smooth in fit, Wrinkle-less! • With genuine elasticity (real comfort) in the welt, a perfectly-fitting, non-slipping "square" heel—and the famous knit-to-fit Gussetoe (exclusive) • With the "K" Gussetoe Spiral Machine build up your sales at prices that mean real profits for you!

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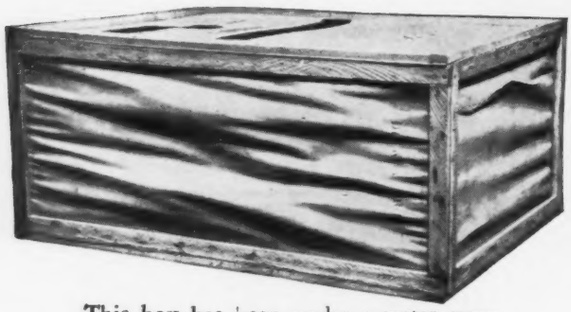
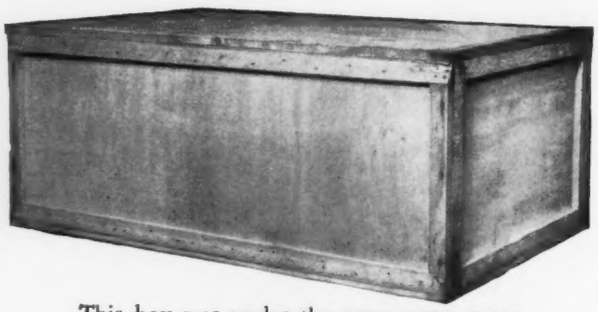
366 BROADWAY, NEW YORK, N. Y.

"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"

"Water resistant boxes deliver the goods"



This box has been under a water spray
48 MINUTES
It is glued with **VEGETABLE**
(non-water-resisting) glue



This box was under the *same* water spray
48 HOURS!!
It is glued with **LAUXEIN**
(water-resisting) glue

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Modernization and Maintenance in a Full-Fashioned Hosiery Plant

By Wallace Strickland

An executive experienced in full-fashioned manufacture presents here a resume of modern equipment and modern practice in plants of this character, describing recent developments and methods in knitting, looping, seaming, boarding, finishing and auxiliary departments. The question of maintenance of the plant and equipment is discussed in a practical manner. . . .

Modernization and maintenance are as essential in full-fashioned hosiery mills as in any other industry. They are undoubtedly the "barometer of success". The growth of every concern depends on whether the management is progressive and willing to budget for this work the same as any other part of the business.

There have been greater strides made in the efficiency of the full-fashioned industry, and improvement of machinery, in the last four years than in any ten previous years. Single-unit, single-head and high-speed machines have attracted the attention of every hosiery manufacturer during the past few years. So much has been written and talked about the first two machines that we feel all of the readers, as well as the writer, have formed their own opinions by this time.

The Question of Machine Speed

We feel, however, that there may be too much enthusiasm about high speed. It is true that the improvements made in full fashioned machine design allow for an increase in speed but we have found that the machines (of the same design) running at the highest speed do not give the largest production.

As an illustration, let us consider leggers with a safe speed of 65 courses per minute. We find that by cutting the speed to 58 to 60 courses per minute, we get at least as much, and frequently more production per month than at the higher speed. The reason for this is very apparent. When running at high speed, more care must be given to the friction leathers, as they glaze very quickly. This is often neglected, causing the end needles to be broken due to carrier rebounding, and while the operator is replacing needles, he is not knitting. We find that higher speed machines make us change carrier tubes more often and that "smashes" are more serious because of the momentum. We believe the same applies to the latest type 70 to 75 course-per-minute machines. *Friction and momentum are governing factors in Physics, and man cannot eliminate them.*

Machine Improvements

We feel that one of the outstanding recent developments tending to increase speed and production is the single needle bar made of light metal. The light metal decreases momentum and the single needle bar helps production, because when some difficulty presents itself, necessitating the laying out of the needle bar, the production of only one section is lost instead of two, as before.

Improvements have also been made in cam design allowing for an increase in speed. Considerable study has been given to balancing the revolving parts so as to give a more even load to the motor, thus allowing greater speed. A feature which recently was brought to the attention of hosiery manufacturers is the balancing cams for the cam shaft. It has been demonstrated, with charts, that the load on the motor is much more constant during the entire cycle and no matter at which point the machine is stopped, it will not run backward. This eliminates the need for a back stop on the hand-wheel shaft, and also gives the machine a smoother motion.

One of the later developments which has attracted considerable interest is the air brake for the cam shaft. It consists of an air chamber and piston and is very simple, requiring only a minimum amount of attention.

Another device for obtaining smoother fabric is the oscillating motion for the ware rollers, causing them to move in and out when the needles go to press, thus eliminating the sudden strain on the stitches.

Courtesy, Textile Machine Works

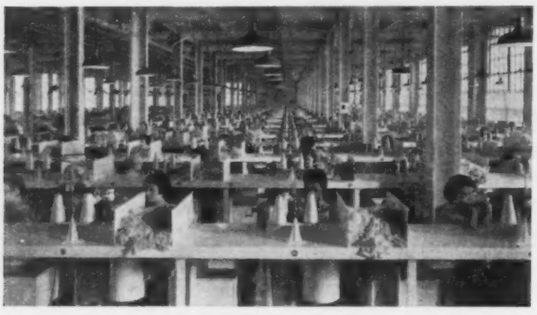
Footing department in a modern mill . . .

The development of what is known as the inside splicing rocker is another improvement of considerable value. This is a device similar to the old-type "wing rocker" and is used in enlarging the loop of eight or ten wales for about the same amount of courses—one-half of the wales in the instep and the other half in the splicing—one-half of the courses above the topping line and the other half below. It has been found that this saves considerable "breaking

out in the corners", and also makes topping easier at this point. This is especially good for merchandise made of fine yarns and knit tightly. The rocking takes place over such a small area that the enlarged loops are entirely eliminated by the time the stocking is finished. It cannot be seen with the naked eye even on the machine.

The Alternating Carrier Attachment

The latest feature is the alternating attachment for carrier rods. This is a device to knit from two or more cones to eliminate light and heavy bands in the fabric, due to change in the denier of the silk. Up to the time of this writing, all knitting of this type has been done by using three carriers. The writer feels it has considerable merit for merchandise made of four-strand yarn or less. This means that it is very adaptable for 45-gauge or finer-gauge machines.



Courtesy, Textile Machine Works

Modernlv equipped seaming department of a full-fashioned hosiery mill . . . .

When one considers the trouble encountered during the past few years due to uneven silk, the thought of using the attachment is a relief, but it also presents several difficulties. It must be remembered that the idea of using several carriers for eliminating stripes in full-fashioned fabrics is new, and some of the troubles will be eliminated and others greatly reduced in the very near future, since many concerns are experimenting with this device.

The most disturbing difficulty is the appearance of horizontal lines or bars. These are due mainly to uneven tension and yarn conditions, but uneven denier also causes some of these lines. It has been found that more care must be exercised in matching legs and feet. Another item to be taken into consideration is that the "press-offs" that are made cannot be backwound and must be topped back on the needle bar. This, however, is not a very serious objection, since there will not be many if the machines and attachments are properly adjusted.

It has been found that knitting with three carriers reduces production from ten to fifteen per cent. This is due to the extra carrier that must be laid in and additional ends that must be cut. These may seem like numerous objections but when we take into consideration the large amount of seconds that can be made into first by eliminating light and heavy streaks in the merchandise, and the possibility of obtaining a premium for the product, we feel a plant is justified in installing these attachments, especially on the machines making chiffon hosiery.

Maintenance should start with the outside of the buildings and surrounding grounds and extend throughout the mill. The importance of well-kept buildings is not only essential for the good impression it leaves on the visitors, but the effect it has on the employees, since pleasant surroundings are bound to have a good effect on efficiency and quality.

Maintenance of Plant and Equipment

In the knitting room, clean floors reflect efficiency because when the floors are clear of ravellings and oil, it is proof that an effort is being made to keep waste at a minimum. Clean machinery also is very essential for the maintenance and efficiency in a knitting mill. A considerable amount of breakage and repair bills can be traced to dirt and filth on machines. Such negligence is also a cause for loss of

Courtesy, Textile Machine Works

A modern looping department, with uniform and modern tables, bins, and racks

production and irregulars. Dirty and gummy tension wires, eyelets, or carrier tubes will cause short lengths and press-offs. Dirt in the sinker- and jack-heads will cause parts to be moved with more difficulty, consequently tight vertical lines will result.

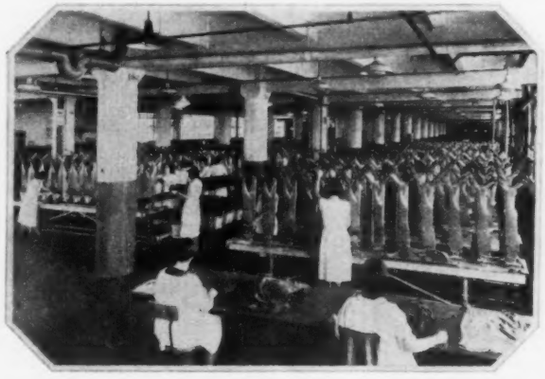
The amount of damage caused to shafts and bearings due to dirt in oil holes is hard to estimate because at the time the break-down occurs, the one responsible for the dirt usually finds an excuse. Those short ends of silk yarn, which some operators throw around so carelesly, often result in excessive wear, or "frozen" bearings. While talking about "frozen" bearings, when a sluggish revolving part is discovered, the fixer should not depend on the part working free, but a thorough examination should immediately be made to find the source, thus avoiding what may be considerable trouble and costly delay. This is especially true of cam rollers. They often stick and wear flat on the periphery, and in a short time wear the cam down to such an extent that it must be replaced.

One method of keeping floors clean, as well as saving on lubricating expense, is to equip the machines with special grease fittings. A special crew for oiling and cleaning saves expense due to "frozen" bearings and also lowers oil consumption. We do not feel that knitters are careless but a good production knitter is more concerned about dozens than oil. Of course, one must bear in mind that the number of machines in a mill has some effect on this method. If a plant has only a few machines, comparatively speaking, it is

expensive to hire a man for oiling and cleaning only. In such a case, the machine operator should do it under close supervision of the foreman.

We would not recommend any specific system for lubricating and cleaning, since local conditions should govern this item. We feel, since it is imperative that the machines be cleaned and oiled frequently, that the foreman should adopt the most adequate method for his particular needs. It is the foreman's responsibility to see that whatever method he employs is carried out correctly. The kind of lubricants to use in various parts can be determined by charts published by the machinery manufacturers.

It is our belief that a considerable amount of breakage, seconds and loss of production on full-fashioned machines can be traced to frictions. If the friction shoes are not kept in first-class condition, and the leather left to harden and glaze, they will bind and either break or cause excessive wear on the parts of the machine between the friction rod and the motor. Improper pressure on friction shoes allows the carriers to rebound, and thus causes rough selvages or press-offs when the carrier strikes the sinker, but more often broken needles. And as stated before, when the operator is inserting replacement needles, the machine is not laying thread, thus the production will suffer perceptibly. Rough selvages retard the speed of the seamer, and if they are rough on the inside selvage of the heel tabs, the toppers will experience greater difficulty, hence there is a loss of production in these two operations.



Courtesy, Mock, Judson, Voehringer Co.

Boarding department of a well-known full-fashioned mill . . . . . .

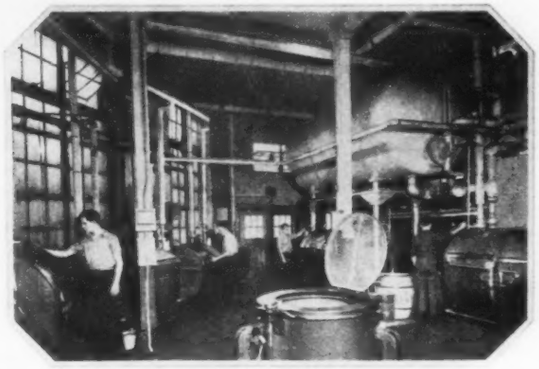
In our mill we try to teach the boys learning to operate a machine that proper care of frictions is just as important as straightening needles or turning welts. We do not care to recommend any specific lubricant for friction shoes since there are several good kinds.

In these days of keen competition, the mill executive cannot pay too much attention to maintenance, in order to be able to produce a maximum amount of first quality merchandise. To the knitting room head, this means largely that every precaution must be taken to eliminate streaks and lines, and maintain uniform stitches. Consequently, sinkers, dividers, knock-over bits, jacks, slur cams, verge plates, needles and points must be kept in first-class condition. This means that whenever streaks begin to appear, the whole machine should be closely inspected and the necessary replacements made. We feel that after several years of steady running, money spent on these parts is not wasted, because it is only reasonable that these parts, especially the needles, wear considerably.

We believe in periodic inspections of the verge plates (folding bars). This will save a lot of complaints about sinker lines. Close attention must also be paid to the carrier tubes because very often these become worn and are the cause of "fuzzy" merchandise. We believe in periodic replacements of the tubes in all the main carriers.

Air Conditioning and Humidifying

While discussing stitch formation, it may be well to dwell briefly on the progress made in recent years in air conditioning and humidifying devices. Air-conditioned knitting rooms are apparently becoming very popular in many full-fashioned hosiery mills. It might be time well spent for the aggressive manufacturer to investigate the strides made along these lines recently. Not only do we think this feature helps to maintain uniform lengths and stitches, but it also appears to create a more enjoyable atmosphere for the employees in this department. We think a relative humidity of about 60 per cent and a temperature of about 80 degrees F. give the best results. Too much humidity affects the machinery and too little does not keep the silk yarn in good condition. It must also be borne in mind that the necessity for air conditioning is more apparent in some localities than others. The recent years have brought marked improvements in methods of conditioning yarn, there being several good arrangements for conditioning rooms.



Courtesy, Mock, Judson, Voehringer Co.

The modern dye room of a well-known full-fashioned plant . . . . . .

Another development worthy of consideration is the leveling device for the moistening troughs. By this arrangement the troughs are kept at the same predetermined level, which helps control lengths. There also have been some recent improvements in moistening trough design, and methods of moistening the yarn on the machine. This is accomplished with the co-operation of the silk throwster in order to increase the effectiveness of direct running silk.

At this point, it may be well to mention that if felts are used in the moistening troughs, they should be changed at least every two weeks, due to the fact that they become coated with gum and do not trans-

mit the required amount of moisture to the yarn. This results in sleazy fabric, irregular lengths, poor matching between the leg and foot, etc. They also become cut by the silk, and if there is a slit in the felt press-offs result when knots appear.

Looping and Seaming

Usually very little attention is paid to the looping and seaming department. Yet these two operations are frequently responsible for a substantial amount of poor work.

The looping machine should be inspected at intervals to see that the points in the dial are in first-class shape, and if any are broken or missing, they should be carefully replaced in order not to enlarge the brass bed, as this is damaged in some cases, causing the points to set improperly. The thread guides and tension arrangement should also be inspected to see that they do not have any defects due to excessive wear which may injure the thread, causing it to break after the hosiery is looped. We believe that all manufacturers making chiffon hosiery should investigate the improved feeding mechanism for seamers, if they have not already done so. This makes a very fine seam, consequently, gives a better appearance to the finished product. There also has been an improvement in the mounting of the seaming machine that tends to materially reduce vibration which is so common to this machine. We believe, because of the high speed of the seamer, that it should be inspected very frequently to see that a sufficient amount of oil gets to all of the bearings. The least little trouble in the bearings of this little machine will cause excessive vibration. There also should be periodical inspections of the feeding cups to be sure that there are no rough places on them, since rough places will damage the thread. This difficulty is usually not found until after the stocking is finished.

Courtesy, Edward R. Ammon, Inc.

A modern installation of an automatic machine for examining, inspecting, counting full-fashioned hosiery . .

The bearings and motors in the seaming and looping departments should be regularly inspected and properly lubricated. The operators of these machines should also be compelled to thoroughly clean their machines each week.

The past several years have made buyers very finicky regarding the quality of merchandise. This fact, together with the demand for very sheer hose, compels the manufacturer to examine his merchandise more closely in the grey. Various means have been developed to do this and there are several good examining devices obtainable for this purpose. We feel that it is a good plan to examine the grey goods with some kind of expanding form, in order to be sure that a minimum amount of blind narrowings are not passed through to the finishing department.

We ask the dye-house foreman to see that each machine is cleaned every night and find that this helps to prevent spots in the dyed merchandise. We also insist on periodic inspection of the pinions and bearings of the dyeing machine to be certain that there are no serious break-downs at a time when we need this equipment the most. When one considers the heavy work these machines are required to do, the necessity for cleaning, and frequent and proper lubrication, is apparent.

Dyeing and Boarding

The writer has no special preference for boarding equipment since we feel that all the machines, as well as the steam and hot water forms, are efficient if properly handled. However, here again we must mention that the head of this department should be very careful when inspecting the forms to see that they are not dented. During the past year we have also seen new boarding machines that take up a minimum amount of space. Another feature they have which we think is worthy of consideration is that the intensity of the heat of various parts of the form is applied in accordance with the thickness of the merchandise at that point. In other words, there is more heat at the welt and toe than there is in the main portion of the leg. We also feel that it is very important that the tables, bins and racks in this department are thoroughly inspected to see if there are any rough spots, since there is plenty of opportunity for "pull threads" in this room.

Our opinion is that in many instances not enough attention is paid the equipment of the finishing room. By this we mean the tables, bins, trucks, cabinets, etc. The lower part of the tables should be painted sheet steel, glass or fine-grain wood that can be finished very smoothly. They should be inspected periodically, and all rough spots should be removed. This will help to keep "pull threads" low. We also try to use trucks of such design that the employees must not lift more than necessary. This increases the efficiency of the employees since they do not tire so easily, and in many instances a pile of goods can be moved by one person, which would require two if much lifting had to be done.

Great care should be exercised to provide good storage facilities for the finished merchandise. We suggest a steel or hardwood cabinet with doors and locks. In this way the dust and dirt can be kept off of the stock, and one or two persons can be held responsible for the inventory. It also saves time when making up lots for shipment. These cabinets must also be inspected frequently to be sure that there are no chances for "pull threads". Some system should be devised for storing riders, labels, bands, etc., not only to preserve these items, but for the purpose of saving time. If girls in all departments remove rings and bracelets while working, "pull threads" will be reduced.

A Descriptive Inspection Tour through a Modern, Maintained Seamless Mill

By Albert T. Russell

JOIN US, in this article, on a tour of inspection of one efficient and up-to-date mill man's conception of a modern seamless hosiery mill. The author's ideas of what he has now—and what he should desire, in cases where he hasn't gotten around to it yet—with reference to everything about the mill, from the office, through the building and its equipment, and back again, are given here . . . . . .

THE seamless hosiery manufacturing business, whether it be men's socks, ladies', misses' or children's hose, has undergone some radical changes during the past few years. Buildings, machinery, production and sales methods—in fact, everything — has gone through a process of modernization toward greater efficiency. To be sure, a large number of successful mills can proudly look back at a very modest beginning, perhaps in a garage, vacant store building or in a back room of a family dwelling. Very often this form of expansion winds up in a jumbled arrangement, making efficient handling of goods difficult or impossible. The cost of maintaining such buildings is usually high. Without dwelling at length on what has been done along this line in the past, I would invite the reader to go with me on an inspection tour of a modern seamless hosiery mill.

The Building

As we look at the building from the outside, we note the concrete, brick and steel construction. It was erected to withstand the ravages of the elements, with every dollar's worth of avoidable maintenance cost built into it from the roof to the basement. Tons of steel are hidden away within its walls.

On entering the mill, we find concrete stairways and metal hand rails leading to the upper floor. The building was purposely erected two stories due to land being expensive, to reduce the roof area, to make possible a more compact arrangement of the various departments, and other reasons too numerous to mention. We note the large concrete pillars which support the roof, the complete absence of electric wires and wire supports. All electric wiring throughout the mill is encased in metal conduit and receptacles.

With the exception of hardwood floors, a few yarn bins, tables, chairs, etc., everything we have seen, as far as the building is concerned, is either concrete, steel, or brick. This building is as nearly fire-proof as possible. Our fire alarm and sprinkler system is inspected and tested regularly. We could have a nice hot fire on one floor without doing any serious damage above or below.

Large steel window frames are used throughout the mill, for we need plenty of daylight, and the window glass is designed especially to let the light in and keep the glare out. The upper half of the walls and the ceilings are clean and white. It pays to keep them that way; we turn out much more and better work. White walls and ceilings make our modern lighting system more effective on dark days during the winter months, and for our night shifts.

We recall that the weather outside was cold and disagreeable when we entered the mill, but once inside we noticed that the air was warm and fresh with all the windows shut, making us feel just right. This is accomplished by the automatic temperature and humidity controls which mean so much to us, especially in the knitting departments. The air is washed as it enters the building, heated in winter, cooled in summer, and the humidity is kept at the ideal point in the different departments throughout the mill. Drinking fountains and wash rooms and toilets are up-to-date.

Yarn Handling and Winding

As you know, we make a complete line of high-grade men's, women's and children's seamless hosiery in both plain and fancy numbers. We use dependable Durene and high grade rayon and silk. A very large amount of the yarn we buy comes in skeins and is dyed here at the mill, for our ingrain and fancy numbers. It is therefore necessary that we have good winding equipment. Various types of bobbin and cone winding machinery, which have been greatly improved during recent years, are available. These machines run at high speeds and turn out perfectly built packages, which is very important if results are to be gotten on the numerous kinds of knitting machines. A regular and thorough lubrication plus a few minor adjustments is about all the attention these winders require to keep them humming along. They were built for service.

Winding is our first operation. The full packages of yarn are taken to the yarn issuing department which, as you will note, is centrally located between the knitting departments. Here the various operators call for all yarn as needed, and return empty cones or bobbins, also unused yarn.

The Ribbers

Our next operation is ribbing. In this department we make the tops for our transferred numbers such as plain and fancy half-hose and children's hose. Today's markets offer some really remarkable machines for this purpose. Numerous worthwhile attachments have been added to rib machines of various makes, such as picot attachments, positive yarn changing and plaiting attachments capable of making tops with four

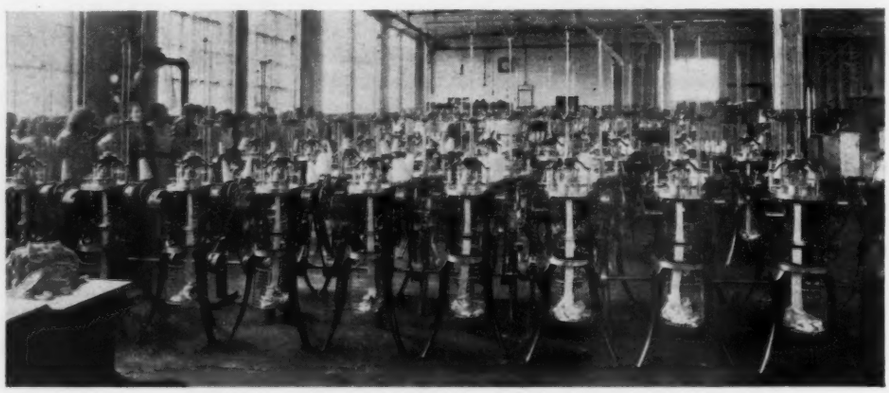
or five different colors in various widths of stripes, also mesh or lace patterns, and many others. Outstanding in the rib field are machines which will produce fancy tops by the needle wrap method; these are especially desirable for children's numbers. On such machines it is possible to produce tops with four or five different body colors or stripes in addition to wrapping colored yarns around individual needles, thus making it possible to produce no end of unique and attractive patterns and designs in a wide range of color combinations. Well made merchandise of this kind is always in demand.

We note as we go through the mill that we use individual motors to drive the line shafts for the different machines. Each shaft is equipped with steel split pulleys and dependable ball bearing hangers. Such equipment gives years of trouble-free service and costs very little to maintain.

The finished rib tops are tied in dozens, put in bags, and taken to the top department where the various transfer knitters can call for tops as needed. The top department is located between the ribbing and transfer knitting departments so as to save steps for rib operators and knitters.

The Knitting Department

In order to be able to make a complete line of men's, women's and children's plain and fancy goods, we must have modern up-to-date machines built and designed to produce the respective types of goods. Among these are included ladies' hose machines capable of producing extremely fine gauge goods with many new features which tend to make them fit perfectly, wear well, and really satisfy the fastidious women of today in every respect.



An installation of ribbers producing infants' long rib legs . . . . .

Courtesy, Fidelity Machine Co.

Knitting machine builders have been very active in developing machines which will produce excellent high grade half-hose in both plain and fancy numbers. For the more or less plain types of half-hose we use machines which automatically knit in extra plies of yarn at every point of wear in the high splice, heel or toe. The extra plies of yarn are knit in, in addition to the regular heel and toe and splice yarns, thus giving the purchaser of such hose more hosiery service for his money than he ever got before, regardless of the price he paid. These numbers are knit in silk and mercerized cotton combinations and all-cotton in both ingrain and dip-dyed.

Progress is an inadequate word to describe what machine builders have accomplished in developing fancy half-hose equipment during the past few years. Outstanding among the later developments are wrap stripe machines having from 24 to 80 individual color feeds which can be used at the same time to produce embroidery type patterns and designs. Attractive block designs can also be made with color-in-a-color, color-beside-a-color, and many others, all produced by the needle wrap method.

In addition, there are numerous attachments which were expressly developed to help modernize older machinery. Among these are included two-feed and improved reverse plaiting attachments, imitation wrap stripe attachments, and two feed tuck or float stitch attachments. We use the latest type machinery available, for we realize how utterly impossible it is to fill present-day demands with obsolete machinery. According to latest grape-vine reports, many new developments will be shown at the next knitting exposition —more power to the machinery builders!

Next we come to the knitting machines on which the children's numbers are produced. Plain machines are still popular for footing off both plain and fancy rib top numbers in coarse and fine gauges. Most of our machinery is fine gauge. Wrap stripe machines are also available for making children's numbers, neat designs in a variety of color combinations can be produced. Mesh attachments have also been developed for the smaller diameter machines necessary for making children's hose; heretofore these attachments were made only for men's or women's hose machines.

The trend in children's numbers has been constantly increasing toward finer gauges in all-mercerized cotton with a variety of horizontal stripes in numerous colors. For such numbers we use 70-gauge machines equipped with six-color horizontal striping attachments. The number of courses per stripe can be varied from one course up on any color and it requires very little time to change the machine from one combination of different width stripes to another. Excellent merchandise which finds a ready market can be produced on these machines.

We use the highest quality American made needles obtainable in all our knitting machines. Cheap needles are really expensive; it pays to buy the best.

One of the many problems which confront every seamless mill, modern or otherwise, is the proper maintenance of its machinery. Worn-out machines will not deliver the goods. All of our machines are kept in tip-top shape.

Maintenance of Machinery

In order to simplify this problem we maintain a complete parts service department. Here we keep on hand at all times a reasonable supply of genuine machine parts made by the various machine builders for their machines. Expert mechanics trained and experienced on the different kinds of machines will save the mill money if they are supplied with the necessary repair parts. Frequently repairs are of such a nature that the machine fixer, electrician or other repair man cannot make them without the help of machine tools. For such jobs we have a machine shop equipped with lathes, drill presses, milling machine shaper, welding apparatus, etc. Emergency repairs which prevented shut-downs have paid for our shop equipment—not to mention permanent repairs of every description. The machine shop is located on the ground floor where it is readily accessible.

Adjoining the knitting departments we have the double sole cutting department. All goods having double soles and high splices are machine-trimmed, making it possible to turn out a larger volume of goods at a lower cost, compared to the old hand-trimming method. All gray goods are turned at the double sole cutting machines and made ready for the next operation, which is mock seaming or looping, depending on the type of goods and demands of the customer.

Seaming and Looping

Next we come to the mock seaming and welting tables. Here, as elsewhere, we use up-to-date machinery built to turn out perfect work running at high speeds.

Looping is the next operation. All our machines are grouped in rows according to the various gauges of work to be looped. Our loopers range from 20-point to 32-point machines, and we pay particular attention to looping each gauge of work on the proper point machine. All of our loopers are fully equipped with the latest attachments, including individual adjustable looper lights.

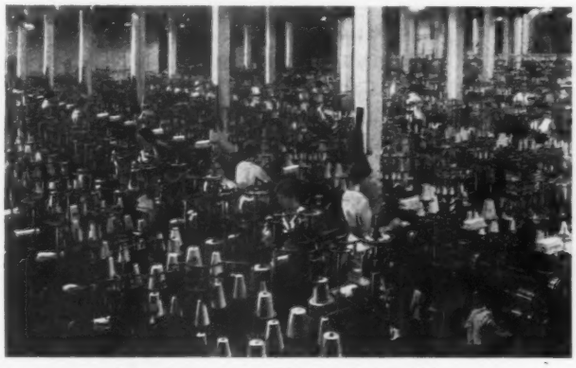
Inspecting and Grey Stock

The grey inspection and mending department comes next. We use the latest type inspection boards which help to show up the various defects. Special attention is given to proper illumination for inspectors and menders and comfortable chairs adjustable for height are provided for these operators.

We have now completed our tour of all grey operations; next comes the grey stock department. The various bins and racks are plainly marked by styles and sizes so the person in charge can readily make up the dye lots according to orders which are received from the finishing department. All goods to be dyed are placed in dye bags, properly marked as to sizes and colors wanted. They are then dropped into one of the various chutes, which puts them into the dyehouse. Ingrain goods are also dropped into chutes in the regular work bags excepting that they fall into trucks and are immediately taken to the boarding department. This method saves considerable unnecessary handling and trucking.

The Dyehouse

We will now proceed to the ground floor and inspect the dyehouse. We note that only a small part of the dyehouse is immediately under the gray stock room, just enough to take care of the chutes. The



Courtesy, Hemphill Company, and Wilkesboro Hosiery Mills

A large installation of wrap stripe machines producing half-hose, etc. . . . . .

remainder is of single-story saw-tooth roof construction. All of the machinery is located in the latter portion. We do not have "London fogs" in our dyehouse, thanks to our saw-tooth roof and modern ventilating system.

We use the latest in Monel metal dye tubs equipped with metal frames. All tubs are driven from one line shaft. We must have evenly dyed cotton yarns for our ingrain numbers; streaky yarns are simply out of the picture. We get excellent results with our all-metal skein dyeing machines; they were built for this purpose. Our extractors are of the latest type, equipped with individual motors and drives, and we keep them in A-1 shape. A dilapidated extractor is a very dangerous piece of machinery to work with. We use high grade valves everywhere; they pay for themselves by preventing wasted water, steam and dye liquors. Good drainage facilities were built into the floor so that overflow, tub drainage, etc., do not hinder the men at work. Rust and corrosion are a menace to dyehouse machinery; to fight this we repaint machinery and pipe lines regularly with paint especially prepared to protect metals. Our water conditioning equipment is up-to-date, and we have a completely equipped dyehouse laboratory.

Our boiler room is conveniently located and well equipped with a boiler of ample size, automatic stoker and forced draft. An automatic hot water return system supplies the boiler with a considerable amount of pre-heated water.

The Boarding Department

Next we visit the boarding room. Steam heated metal drying forms are used, all wet goods troughs

are made of metal. All forms are grouped according to the styles which they serve, and the different shapes seen were especially designed to give the best possible finished appearance for the different numbers. We note that we use entirely diffrent equipment for our ladies' hose. These are the very latest ladies' hose finishing machines on the market and surpass anything we have ever seen or used. The forms on these machines are steam heated like the others, but are provided with two steam inlet lines. One is used for finishing chiffon, the other for heavier weight goods. In addition to this, these forms are especially designed to give two temperatures at the various drying surfaces so that the sheer portions of the hose are dried at a suitable low temperature and the heavier portions at a higher temperature. Thus they prevent drying one portion and baking the other. These new machines are designed to require very little floor space, eliminate walking for the operator, and give high production at a low maintenance cost. A constant flow of fresh air keeps this department as comfortable as the requirements of the operation will permit.

Finishing, Packing, Shipping

Suitable trucks are provided to move the goods to the finishing department. Systematic routing of goods through the various operations such as inspecting, pairing, stamping, labeling, boxing, etc., is very important. Special attention is given to correct illumination at the different tables for the respective operations. All tables are of uniform height and suitable chairs or stools are provided for all employees. The table tops are coated with light grey dull finish enamel. We find that this color reduces eye strain and consequently our employees do more and better work with less fatigue. The coating we use is washable and leaves a smooth finish which prevents drawn threads or other damage frequently caused by rough table tops.

Finally, we come to the packing and shipping room. Here we have suitable equipment for building wood cases for foreign shipments. For domestic shipments we depend on strong corrugated cartons. They are cheaper, especially for the smaller orders. We carry a complete range of the necessary sizes, to avoid cutting down or stuffing. Our scales are up-to-date; *they* do the weighing, our clerk need only put a carton or case on them and read the figures. We use the best in tape serving, carton banding and stencil making equipment. We have ample storage space in this department so we can pack and store goods as fast as they are finished, and when the last case of an order is packed, out they go.

Next we will visit a very useful part of the building—the basement. Here we have our yarn storage room, where all yarns are kept until needed in the different departments. This room is a separate enclosure so we can properly control the temperature and humidity so the yarns will be kept in the best condition for knitting. The elevator is close at hand, as is the outside entrance to the basement, so we can readily handle cases of yarn and material. The mill carpenter and electrician have their workshops in the basement. Our basement is not cluttered with junk, obsolete machines and what-not; rather, it is the mill's storage room for things we need.

Now for our final visit. We see the beginning and end of the mill—our main office. Here we are equipped with modern office machinery of every description. Our switchboard operator handles all outside calls as well as inter-departmental calls, and the auto-call system. This service saves much running around for department heads. We have a first aid room with a competent person in charge to take care of minor injury. This is our president's office here. He planned this whole mill, and, peculiar as it may seem, he failed to include his office in the plans. When he was questioned about it, he simply said, "Any one of these corners will do. I don't need a lot of room as I intend to spend much of my time out in the mill," and he does just that.

Cotton Canvas Chutes

Cotton canvas chutes so successfully demonstrated their value as emergency fire escapes at the recent Shirokiya department store fire in Tokyo, that their general use has been authorized in Japan. The New Uses Section of the Cotton-Textile Institute is advised that the Japanese Department of Home Affairs has prepared regulations providing that all large buildings be equipped with these chutes as auxiliary fire escapes.

At the Tokyo fire, a large number of people were rescued from the fifth floor of the store by means of the chutes. This practical demonstration, according to the Institute, points to the possibility of a large outlet for cotton canvas as emergency fire escapes in the United States. They appear to be particularly appropriate, the Institute states, for use in summer hotels, hospitals, schools and similar institutions of the older type where adequate fire escape facilities of the modern permanent type cannot be completely installed. In many such places rope and chain installations are serving as auxiliaries to the permanent escapes.

Canvas chutes would offer the same evacuation facilities as spiral tubular metal chutes sometimes permanently installed in institutional buildings in this country, at the same time affording the utmost service flexibility in that the canvas chute may be moved from one danger point to another as emergencies arise.

The chutes, as used in Japan, are made of canvas reinforced with heavy cords with the upper opening hinged like a jaw. A heavy iron bar is fastened to the lower part of the "jaw" extensible to fit various widths of windows. When in place the upper "jaw" is raised and locked into position. The chute forms an inclined tunnel from a window to an adjoining roof or to the ground where the lower end is held by firemen or other rescuers. When not in use the chutes are reeled up like a large hose. In case of fire they are unreeled out of appropriate windows, and the upper ends fastened in place.

Fire stations in Japan are equipped with the canvas chutes, which suggests a place for them in the equipment of volunteer fire organizations in this country. The Institute brought this form of emergency fire escape to the Underwriters Laboratories and was informed that manufacturers contemplating production of such chutes could submit them to the laboratories, if they so desired, for a practical test.

Made today's way

HERE at Torrington we like to say our needles are made by machine.

We feel it is a sign of progress. The same kind of progress, say, that has taken place in the field of "news."

News used to be carried by the town crier . . . an amiable gentleman who wandered from lane to lane, ringing his bell to call attention, repeating as best he could the items of news interest. A quaint and amusing custom, of course . . . but not accurate.

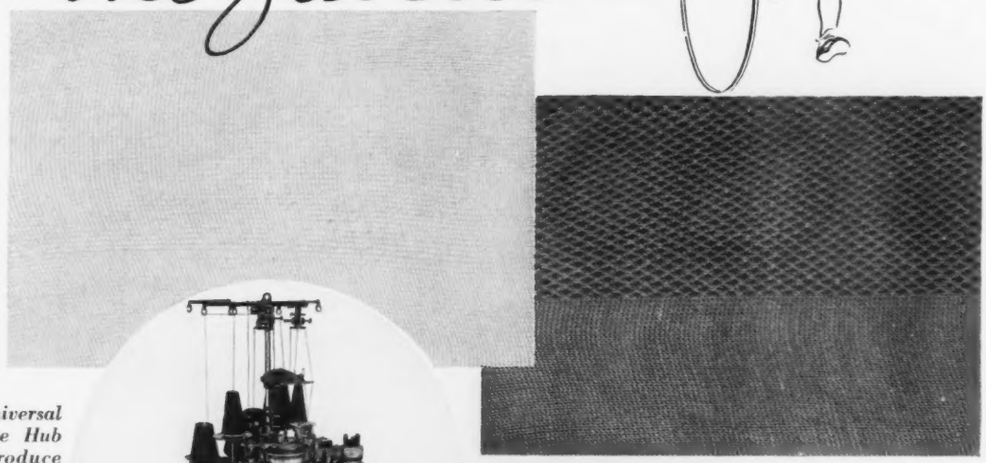
Modern news is told in mechanically-prepared newspapers, printed in huge machines . . . each copy of an issue *exactly* like the hundreds of thousands of other copies.

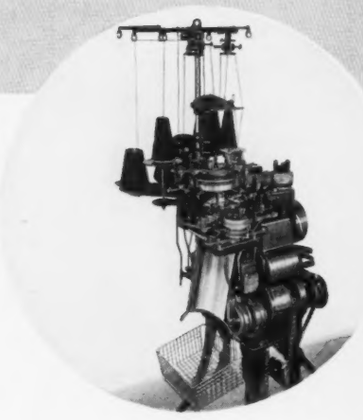
Torringtons are as accurate and uniform as modern newspapers, for they are prepared, too, by machines.

Torrington Needles and Parts will be exhibited at the Knitwear Industrial Exposition, Booth # 14, Grand Central Palace, New York, Feb. 12 to 16, 1934.

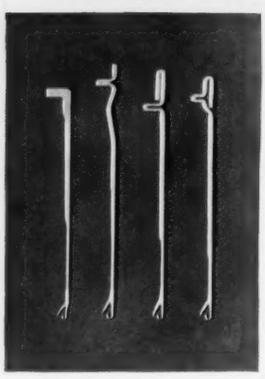
TORRINGTON *SPRING BEARD* **NEEDLES**

Fine fabrics





On this Banner Universal Stitch machine, the Hub Hosiery Mills produce hosiery with that important requirement . . . fine fabric! And the needles are Torringtons.



Torrington Needles and Parts will be exhibited at the Knitwear Industrial Exposition, Booth No. 14, Grand Central Palace, New York, February 12-16, 1934.

It takes the best of everything . . . including needles . . . to make hosiery with a fabric fine enough to pass, *consistently*, the critical test of the clientele. Torringtons are the kind of needles required. Manufacturers who are noted for their unusually high average of "fine fabric" in hosiery, show a loyalty to Torrington needles which is the finest endorsement we know!

The Torrington Company

ESTABLISHED 1866

Torrington, Conn., U.S.A.

BRANCHES:

THE TORRINGTON COMPANY,	1640 FAIRMOUNT AVE.,	PHILADELPHIA
THE TORRINGTON CO., INC.,	200 FIFTH AVE,	NEW YORK, N. Y.
THE TORRINGTON COMPANY,	538 SOUTH WELLS ST.,	CHICAGO, ILLINOIS
THE TORRINGTON COMPANY	UNITED BANK BLDG.	GREENSBORO, N. C.
THE S. M. SUPPLIES CO.	210 SOUTH STREET	BOSTON, MASS.
LOS FABRICANTES UNIDOS,	964 CALLE BELGRANO,	BUENOS AIRES

FACTORIES AT:

TORRINGTON, CONN. • UPPER BEDFORD, QUEBEC

COVENTRY, ENGLAND • AACHEN, GERMANY

TORRINGTON *Latch* NEEDLES

An Open Discussion of the Situation as to "Ringless" Hosiery

ADVERSE criticism of and unbiased comment on the process of knitting silk hosiery free from rings or shadows with the use of inventions for which applications for patents are pending, and of which the Textile Patents Corporation is in control, seems to have set machinery in motion for getting at the bottom of the contention that the process is or is not practicable.

Despite positive assertions of some manufacturers that absolutely ringless stockings are an impossible product of the three-carrier attachment, they are being sold in retail stores to the extent of several manufacturers' capacity for producing them—this on the word of at least two mill chiefs, one in Greensboro, N. C., the other in Philadelphia. This seems likely to be accepted by interests controlling the manufacture and use of these devices to be equivalent to a verdict of an impartial jury, for, it may be pointed out, the consuming public knows little and cares less about the mechanism by which perfection in hosiery—if and when—is obtained.

Necessarily, manufacturers seeking a solution of the problem of turning off a lower per cent of defective stockings may have become impatient over delay of the final word of the Textile Patents Corporation in supplying information at least bordering on the specifically constructive. That delay may have raised doubt, and it may have encouraged experimentation, with unsatisfactory results, as doubtless often in the case of the inventors themselves. In their behalf some one makes the point that the first full-fashioned hosiery machines, the first locomotive, and initial application of electricity to telegraph and telephone communication were for years afterward as far from perfection as at present conceded, as the North Pole is from the South Pole. "We've got it after a long silence," said the Textile Patents Corporation in a statement appearing in print in trade publications a few weeks ago, divulging in part the plans of that company. It is appropriate to quote specifically the following from that statement:

> "A considerable size sinking fund has been provided by the Textile Patents Corporation and its associates for the financing of patent litigation."

In the light of experience, it was to be assumed that the corporation might be called into action for protecting its licensees against infringement. But some one rose to remark that "It is a questionable policy to threaten litigation for infringement and to announce practical control of a new method of manufacture before a single patent has actually been issued." Thus, it transpired, the corporation's statement appearing in print fanned embers of criticism into flame that singed the Knitting Machine Importers' Association, and brought forth a warning that "attachments to change thread carriers alternately (striping attachments) have constantly been in use on full-fashioned hosiery and other flat knitting machines for fifty years or more," and that "for making so-called 'ringless hosiery,' any of these old and well known attachments can be used."

Accepting this "warning" as well founded, it was suggested by a manufacturer who hitherto had taken no part in the "dispute," that "Manufacturers of full-fashioned hosiery machines must have been asleep at or near the switch, to have permitted an opportunity to exploit coveted ringless stockings to pass unnoticed."

The manufacturer quoted doubted that the attachments referred to in the excerpt from the "warning" were operated in conjunction with a tension equalizing device for each such attachment, as said to be covered in the invention of Paul Krenkel, whose signature appears in the contract or agreement under which the Textile Patents Corporation took virtually its initial step in its proposed control of the manufacture and marketing of ringless hosiery.

An unlooked-for indicated development following closely on the heels of the "warning" issued by the Knitting Machine Importers' Association, was a rumor appearing in Philadelphia manufacturing circles that "manufacturers of ringless hosiery conforming to Textile Patents Corporation standards, although using attachments other than those obtained from the Textile Machine Works, were eligible as Textile Patents Corporation licensees." While Vice-President W. R. Smith, attorney for the corporation, declined to confirm or deny the report, it appeared upon inquiry among manufacturers closely identified with him, that it was not lacking in foundation.

Commenting on criticism referring to samples of stockings from ringless attachments* of possibly two months ago—that foot and leg did not present a perfect matching—a spokesman for the patents corporation said that may have been true of hosiery of that time, but that the trouble had been entirely overcome. "There has been a careful, complete checking up of results from operations under every improvement, as shortcomings appeared," it was stated, "and we have a record of these operations from which we can safely promise 'successful production and sale of ringless machines.'"

A disinterested manufacturer to whom the matter of mis-matching of leg and foot was referred for an opinion, said he thought that ordinarily it might be due to the character of the silk rather than

*See article, "A Problem of Mis-Matching of Silk in Leg and Foot with Alternating Three-Carrier Attachment," page 139, this issue, embodying this inquiry and two comments.—The Editor.

to the ringless attachment.

The possibility of a "wash-board" effect in the fabric, as readily perceptible as the rings or shadows also has been eliminated, according to Textile Patents Corporation advices. This is said to have been discovered during the various stages of development of the ringless mechanism. It would appear that practically all of the adverse criticism brought to the attention of the Textile Patents Corporation, directly and through the medium of COTTON and other textile trade publications, has been constructive in tone, this of course leaving out of consideration generalities in which several undeniably well informed manufacturers possessed of a depth of technical knowledge have indulged.

Will the Consumer Pay the Price for Shadowless, Clear Stockings?

The observation of a correspondent in a trade publication that "the only way to make a perfect ringless stocking of pleasing fabric appearance is to have one strand of perfect silk," raises in that correspondent's mind the proposal that "distributors and consumers will have to face the question of intrinsic value of perfect silk hosiery and pay a reasonable price for such an article, or dismiss the subject entirely and take average production at its value."

"Ringless hosiery will be a staple by fall," is the prediction of Thomas W. Montgomery, of Montgomery & Vanneman, selling agents under the title Granite Associated Mills and distributing to retailers. Encountered in his firm's office in the Twelfth and Market Streets bank building in Philadelphia, Mr. Montgomery recounted the experiences of several manufacturers whose innovations ceased to be novelties after a season or two and ranked as staples.

Referring to the French heel for illustrating his point, Mr. Montgomery pointed out that for a time it was invariably emphasized in the talking points of a stocking, whereas now women buy it without asking for it, because it has become a staple. "Ringless hosiery", he said, "may be treated as a novelty for some time. I would not be surprised to find it ranking as a staple by fall, and that eventually all chiffon hosiery will be of ringless construction, clear and free from shadowy effect and waves."

There is seen no more likelihood that, for the present, ringless hosiery will be offered in retail stores for less than one dollar a pair than that three-thread silk 51-gauge not exploited as ringless will be offered at 89 cents. The three-51 number in the Berkshire line is quoted $9.75 a dozen to retailers, who have available to them also, at the same price, what is described as a three-carrier ringless number, but not so mentioned in the company's latest list.

Ringless hosiery, although not so described in advertising, has been on sale in some of the better shops and department stores since the spring of 1933. It was introduced in the John Wanamaker Philadelphia store in March last by the Greensboro (N. C.) Full Fashioned Hosiery Mill, Inc., as announced in news columns of trade publications at the time and stated quite recently by F. Osborne Pfingst, president and general manager of the company, who said 50 per cent of the equipment was engaged on the ringless. About the time that the Greensboro mill was having its initial sales of ringless, the LaSalle Hosiery Mill was producing a similar stocking on a single unit machine and soon had it in a leading department store. It was stated a few weeks ago by a person authorized to speak for the LaSalle that it was operating the ringless equipment 100 per cent capacity. It is understood that stores refrained from advertising ringless hosiery lest a charge of infringing involve them, indirectly, in litigation, an unpleasantness that was not wholly unlooked for, judging from a statement contained in the Textile Patents Corporation announcement of January 5. Mr. Pfingst states that with the use of the ringless attachment the production of seconds is 10 to 15 per cent less than when knitting in the ordinary way, using identical silk.

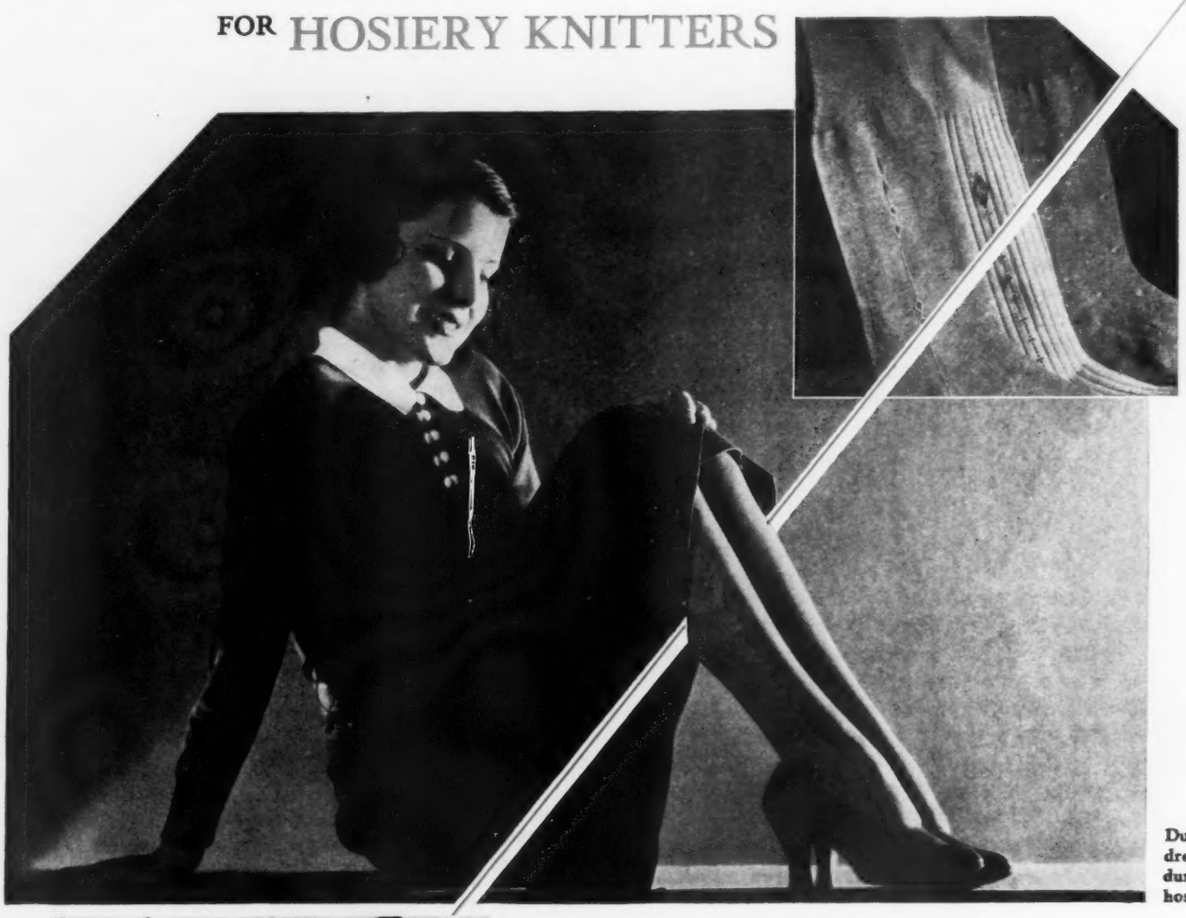
In line with Thomas W. Montgomery's prediction of ringless hosiery becoming a staple by fall and as if accepting at their face value the claims made by the Textile Patents Corporation for the inventions which it is said to control, it is stated officially that approximately 1000 machines are in course of being equipped with the three-carrier attachment for the manufacture and sale of which, "at a reasonable price," the right has been granted to the Textile Machine Works. Incorporated in announcement to this effect is a statement of the Textile Patents Corporation that "this company (the Textile Machine Works) has been experimenting over quite a long period and have recently developed an attachment incorporating all of the improved features developed to date."

As a half dozen or more inventors had applications pending for patents contributory to the production of ringless hosiery, considerable time was required for assembling them in single unit control. The inventors had to be assured of their status under such control and manufacturers sponsoring the launching of prospective patents combining the essential features in each of the inventions, had to be shown, it is pointed out in accounting for the time consumed in completion of the job, in which conflicting individual interests had to be placated.

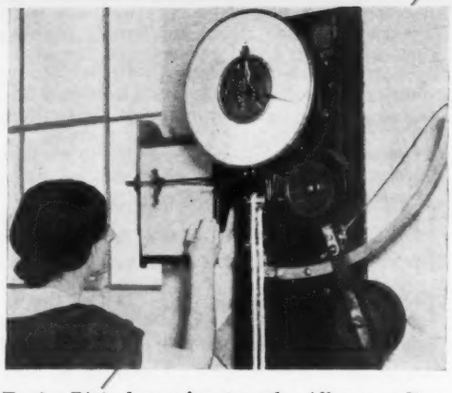
Obviously the prestige of certain of the manufacturers whose names appear in an official statement of the Textile Patents Corporation has given weight to the claims of that company as to the alleged perfection of the ringless device. The group of manufacturers and individual inventors listed by the corporation as owning the "meritorious features" of the proposed patents for which applications are pending, are as follows:

Apex Hosiery Company, Textile Machine Works, Julius Kayser & Company, Berkshire Knitting Mills, Mock, Judson, Voehringer Company, Inc., Meinig Hosiery Company, Oakbrook Hosiery Mill, Greensboro Full Fashioned Silk Hosiery Mills, Inc., Charles Kaufman, Paul Krenkel, F. Osborne Pfingst, and Isaac C. Eberly. Usually when either of most of these names appears on the dotted line, those in the

What CONTROL-MANUFACTURED DIXIE *Durene* IS DOING FOR HOSIERY KNITTERS



Durene dress -- durene hosiery



Testing Dixie durene for strength. All test readings must meet or exceed high standard requirements.

We carefully heed the requests of hosiery knitters who say "Give us strong yarn." We realize that strength makes wear, so we start building strength into Dixie durene by using only long-stapled cotton.

Next, we look to the mercerizing process itself. Here there is shrinkage that builds strength if it is controlled to avoid over-tension. We regulate tension with carefully adjusted, ball-bearing mounted rollers throughout all Dixie mercerizing machines. Then we preserve this strength with air drying that prevents brittleness or lifelessness.

To top off controlled manufacture's quest of strength our testing stations and control laboratory make almost hourly use of all 4 of their skein and strand-break testing machines. Weak yarn has no chance to "get by" under controlled manufacture.

Dixie durene is more than meeting hosiery knitters' needs for strong yarn because of carefully controlled production methods. Let Dixie ship your next order of mercerized yarn.

DIXIE DURENE - - A Product of Controlled Manufacture

DIXIE MERCERIZING COMPANY

CHATTANOOGA - TENNESSEE

hosiery and machine trades who have known them longest are prone to at least attach some significance to the asseverations to which they are respectively signatory.

Of some significance in the storm that suddenly broke over the ringless hosiery calm a few weeks ago was the announcement, about that time, that Julius Kayser & Co., whose signature appears on the Textile Patents Corporation list of "individual inventors and group of manufacturers" owning the inventions involved, had been assigned a Canadian patent on ringless hosiery and method of manufacture, and had converted the production of its Canadian Mills entirely to ringless on its sheer numbers; that the patent, No. 336,234, was issued to Charles August Kaufman of Julius Kayser & Co. The name "August" is omitted from the signature of the Charles Kaufman embraced in the Textile Patents Corporation list of "individual inventors and groups of manufacturers."

Now that it appears the ringless hosiery situation, from the standpoint of the confident, the sanguine and the doubting has been pretty thoroughly ventilated, a correspondent who "thought it high time that some constructive information and criticism should be passed along to the public," might appropriately suggest that all the facts that the trade is entitled to and ought to have been given to all manufacturers; and that since a ringless patent has been granted in Canada, a similar license be issued under the seal of the Patent Office of the United States.

The Textile Patents Corporation announces it is prepared to grant licenses to reputable hosiery mills, each license requiring the payment of ten cents a dozen royalty. The inventions which it controls and the patent applications therefor being prosecuted in the United States Patent office will, it is stated by Vice President William R. Smith, "give Textile Patents Corporation the desired patent monopoly necessary to the accomplishment of the desired objectives in the hosiery industry."

A manufacturer who says he is using only the best grade of silk in knitting ringless hosiery with the three-carrier device, suspects that some few manufacturers assume that by that process they can obtain satisfactory results from low price raw silk, and that this accounts for displays of so-called ringless priced 69 cents in a few shop windows. Even in the selected best silk, it is maintained by the manufacturer referred to, there is a variation in denier which will result in stripes, or shadows, unless this defect be met with a mechanical device, of which, he states, the three-carrier attachment is the nearest approach to perfection yet attained.

Comments on Ringless Hosiery from Two Southern Hosiery Manufacturers

EDITOR'S NOTE—In connection with this discussion of ringless hosiery, two quotations are presented here from letters from two southern hosiery manufacturers, on the subject. The first says in part:

"I think it is high time that some constructive information and criticism should be passed along to the public on the subject of ringless hosiery. My judgment is that the whole proposition will go up in smoke much quicker than other novelties such as mesh hosiery, anti-run, etc. But it will probably live long enough and receive enough attention to do the industry much more harm than good. I think one of the most unfortunate features of the question is creating in the minds of the consuming public that ringless hosiery can be produced by some simple and inexpensive attachment put on the machine, and that perfect hosiery can be had at prevailing popular prices of 59/69 cents per pair.

"The truth of the matter is that the actual cost of attachments and installation runs anywhere from $200 to $500 per machine, depending on type and gauge of machine. Then the production of the machine will be materially cut, I would say 20 per cent as a minimum, while a very increased percentage in needle breakage and other minor parts may be expected, all resulting in an increased amount of waste and seconds. After all of this, the fabric will not be the beautiful smooth fabric so much desired as found in full-fashioned fabric made from a single thread." (The reader is referred to further comment by this manufacturer, as "Contributor No. 6297", on page 141 of this issue of COTTON.)

Another southern mill man has expressed himself in correspondence as follows:

"In regard to ringless attachments, will say that we have been experimenting with one for a month or more. I am not at all sold on the idea. It is not a practical idea. It is impossible to deliver yarn from three separate cones with the same tension even when the cones are the same size. When one cone runs off and you tie on a new cone you have two small and one large cone, then one small and two large cones, etc., etc. The delivery tension on one cone from the point of cone and base of cone is variable. I have set tensions on this attachment to make an almost perfect texture for six to twelve inches and then go off completely.

"I do say that moderate barre is preferable to conspicuous rings. If the trade will be satisfied and accept the barre as a necessary evil in lieu of rings, then it will go. It will eliminate rings. I had some very bad silk running 34 per cent irregulars due to rings, and knit a set of this silk on the ringless machine and reduced the irregulars to 12 per cent by putting all of the barre in firsts. However, if I had reasonably good silk which would run only 12 per cent irregulars on a simple carrier machine, I would have a product which I would prefer to ringless texture.

"I am of the opinion that there is going to be enough of the exaggerated barre put on the market by careless manufacturers to reflect adversely on the name, just like lace seamless killed full-fashioned lace. Other comparisons, such as grenadine, pointed heels, black heels, and other novelties could be mentioned."

In the article on modernization, page 125 of this issue, is another reference to the three-carrier attachment that will be of interest in connection with the accompanying discussion.

Some Old-Timer Sayings—

Take any kind of "dope" or stimulant at exactly the same time every day for several months, and you will form a bad habit.

Select a time each day to concentrate your thoughts on your work, in an effort to make some improvement over your regular routine duties, and within a reasonable time you will have formed a good habit.

"Beat the other fellow" is a darn good slogan, if you will remember it often enough anr really try to do the constructive thinking that will bring about that result.

* * *

Most any overseer or superintendent can run the job when everything goes smoothly, but it takes a depression or some other tragedy, often, to bring out a good man.

A Problem of Mis-Matching of Silk in Leg and Foot With Alternating Three Carrier Attachment

EDITOR COTTON:

In your publication COTTON, we read the section "KNITTING KINKS" devoted to practical problems. We are having a problem of the foot and leg of a full-fashioned stocking, made with the alternating three-carrier attachment, not matching exactly. This of course may be caused by the silk used on the footer being drier or moister than that used on the legger. Can you secure for me any method by which this mis-matching or change in shading on the footers and leggers can be eliminated?

CONTRIBUTOR NO. 6294.

(*Editor's Note*: *In view of the current interest in this subject, we publish below two answers from mill men to whom a sample of the stocking mentioned by* "CONTRIBUTOR NO. 6294" *was submitted. Their remarks on the problem and on the subject of this new attachment will be of interest.*)

Two Answers

EDITOR COTTON:

The sample stocking which "CONTRIBUTOR NO. 6294" submitted, asking for an opinion as to what caused the shade variation between the foot and the leg, is merely a repetition of a question that has been asked many times recently; especially since various manufacturers have started making merchandise with three alternating carriers. It appears that everyone, who is experimenting or making these stockings, has the same trouble; i. e., greater difficulty in matching the leg and foot than they had when using only one carrier. No one seems to be able to give a definite opinion as to why this should occur. Our personal opinion is, however, that when three main silk carriers are used on the footer, there is much more of a chance for the silk to dry out.

On the stocking submitted, there seems to be more variation in tension on the foot than on the leg. Our reason for this statement is that there are more cross-bars in the foot than in the leg. However, this should not be responsible for the different appearance in color; consequently, we believe that the silk used in the leg is from a different lot than that of the foot.

◆ ◆

WE invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters neet not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All acceptable contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

◆ ◆

Another reason for prominent lines in the instep is that on the footer the silk hangs in the air much longer with three carriers than it did with one carrier. For this reason, in the first few courses there will be a slight difference in the texture of the fabric due to dryness and less resiliency of the yarn, which has a tendency to cause a slightly different stitch. When the yarn is dry, it will also have a tendency to cause a difference in the courses per inch. This, however, is not very apparent on the sample submitted, since the courses vary only slightly.

Close examination will show that there is a difference in the shape of the stitch between the leg and foot, which leads us to believe that the moisture content of the two yarns was not the same. If this sample stocking is stretched or placed on a form, you will note that there is very little noticeable difference between the fabric of the leg and that of the foot. One outstanding point is that the fabric in the foot contains a considerable amount of sleaze, and this confirms our belief that there was a difference in the moisture content of the yarn.

It will also be noticed that there is a marked difference in the fabric between the high splicing and that portion immediately above the splicing, which indicates there must be a difference in the number of courses.

It must be remembered that even though a three carrier attachment is used, the various yarns used must still be segregated, especially so that all the cones for the legs and the cones for the feet are not

AFFINITY *for* COLOR

ABERFOYLE *Durene* YARNS

LESS WORK FOR THE DYER

THE affinity for color of Aberfoyle Durene not only insures quicker and better matching with the silk, but due to its speed of dye absorption, saves that all-important feature "Silk Appearance".

The perfect union of Durene and silk colors practically eliminates re-dyes and cuts costs both in the dye-house and the finishing department.

This quality, combined with the level, lustrous finish of Aberfoyle Durene Yarns, makes them the most economical to use.

ABERFOYLE MANUFACTURING COMPANY

MAIN OFFICES: 123 South Broad Street, Philadelphia

Chattanooga, Tenn. *James Building*
Boston, Mass. *38 Chauncy St.*
High Point, N. C. *Commercial Bank Building*
Chicago, Ill. *914 Merchandise Mart*
Los Angeles
New York *500 Fifth Ave.*
Amsterdam, N. Y.
Reading, Pa. *418 Franklin St.*
Hamilton, Canada

MILLS: *Chester, Pa., Belmont, N. C.*

from different lots. Various lots of silk seem to have their own peculiar affinity for dye.

We believe if the one who submitted this stocking will pay particular attention to the moisture content of the silk and to the tension, he will be able to eliminate some of the trouble he is having.

CONTRIBUTOR No. 6295.

EDITOR COTTON:

This is in answer to the inquiry of "CONTRIBUTOR No. 6294" who submitted a sample of full-fashioned stocking, made by the three-carrier method of operation (on legger and footer) showing a lack of exact match in the foot and leg of the stocking.

My experience with the three-carrier system on full-fashioned machines is limited to exhaustive experimenting which I did with a home-made attachment a long time before anything was said about three carriers. Maybe I am wrong, but my experimenting was sufficient to convince me that the system is impracticable. The sample submitted is purely an example of what is termed "washboard" knitting, which is a condition true to form on three-carrier knitting when variation develops in the diameter of the different threads. The sample submitted is about two courses per inch looser knit in the foot than in the leg. This helps to magnify the trouble.

It also happens that the silk on the legger was running more uniform at the point of transfer than on the footer, which resulted in the washboard effect being more pronounced in the foot fabric than in the leg fabric. By holding this stocking out flat at an angle of about 30 degrees, looking cross-wise at the stocking rather than length-wise, it will be no trouble to see a continuity of the washboard effect from one end of the stocking to the other. My own opinion is that the only possible way to correct this trouble lies in having absolutely uniform silk in diameter, and if such silk was to be had there would be no need whatever of the three-carrier system. And if three carriers serve to minimize rings and to magnify washboards, which in my opinion is an unavoidable condition, then the remedy is just as bad as the disease.

I am open to conviction on the subject and am ready to accept an invitation to any mill to see any machine equipped with any three-carrier system which would uniformly produce stockings free from washboard knitting on even one set, to say nothing of running satisfactorily day in and day out.

There is much that may be done to minimize the trouble, such as being sure that the condition of the silk is exactly the same on both footer and legger, that every tension on every different thread is as nearly perfectly uniform as is humanly possible, and that such conditions are not allowed to vary—which in itself is a practical impossibility—but to say that the trouble can be entirely eliminated or even reasonably eliminated still leaves me a "doubting Thomas."

CONTRIBUTOR No. 6297.

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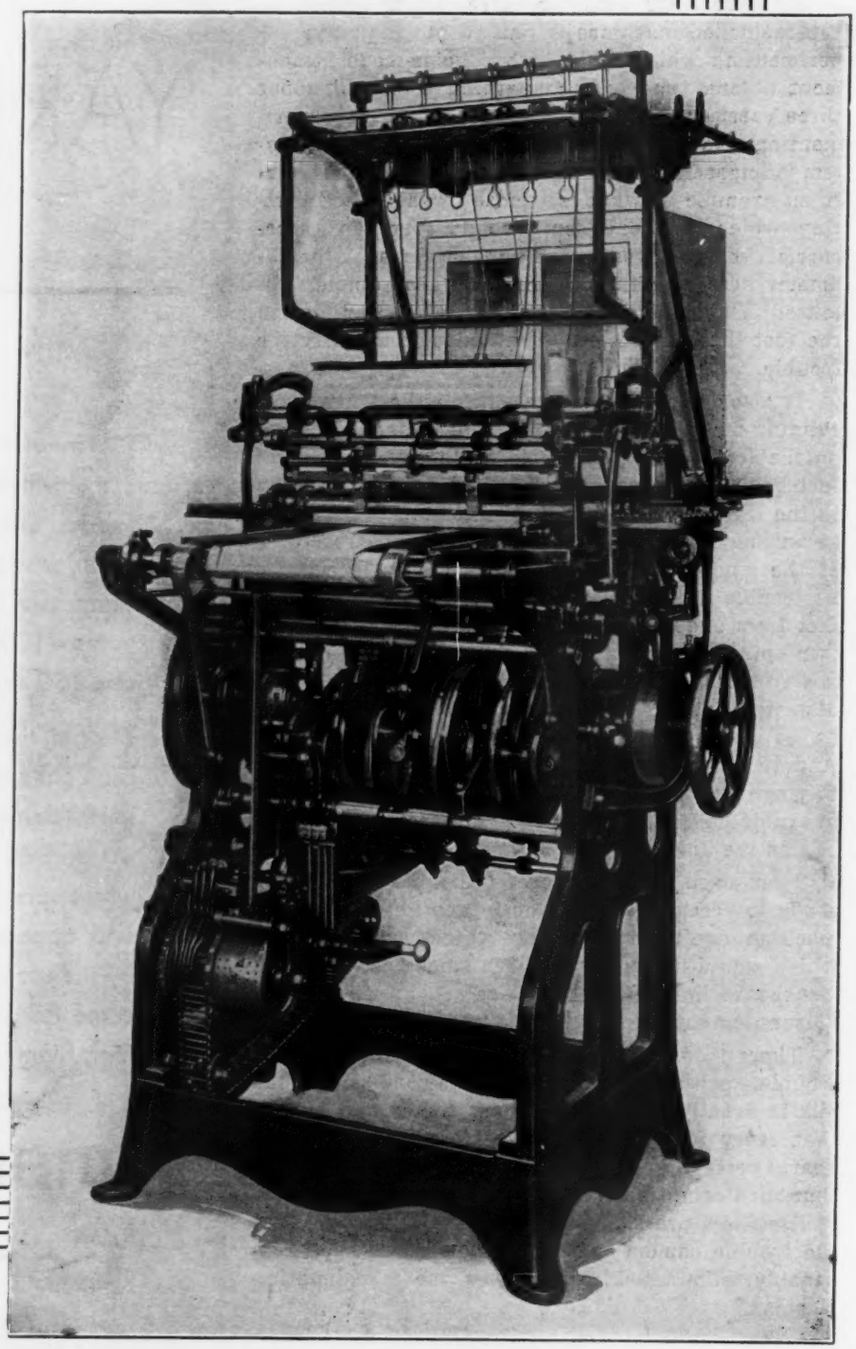

THE KNIT GOODS MARKETS . .

WHEN the hosiery trade was being canvassed unofficially just prior to the registering of a decision as to whether to continue the three-days-a-week schedule beyond the five weeks period of experimenting with 48 hours per week maximum, it was revealed that some manufacturers operating small plants who originally antagonized the curtailment, were favorable to having it extended for an indefinite period in 1934. A manufacturer of full-fashioned hosiery who says he would prefer 30 hours indefinitely, if he considered the question of hours and regulation for his organization alone, sent his proxy for 24 hour shifts to the code authority.

The manufacturer made the point that, to the best of his knowledge, until 1926 very "few full-fashioned machines were operated more than 52 hours a week, while later most of them were in production around 100 hours. "With a maximum 48-hour week we are only four hours short of the prevailing schedule of eight to ten years ago," the hosieryman went on. "As I feel the potential production per capita now is greater than the actual output then, I am for a maximum of two 24-hour shifts. We better had produce less hosiery and make a little money than build surplus stocks and sell them at a loss. The five weeks experiment with three days a week, when there were heavy stocks and a sub-normal seasonal demand, leaves the question of proper curtailment of the 80-hour week still open."

Coincidental with the announcement of the Berkshire Knitting Mills on January 1 of a price of $5.75 a dozen for its four-thread silk 42-gauge plaited foot number—a reduction of 75 cents from its previous list—some of the hosiery buyers for the trade were criticizing manufacturers for unnecessarily increasing prices, while it was common comment among manufacturers that the Berkshire had so priced this particular number that it could show no profit. The retort to the latter criticism was in effect that four-thread 42-gauge was being quoted $5.50 and even lower by several producers in the smaller class before the Berkshire revised its list for spring. And it was observed that buyers alleging undue increases were making comparisons with prices lower than that of the Berkshire, several buyers stating they had been quoted $5.25.

That prices had risen was an assumption on the part of critics among buyers that mills had taken advantage of the enforced 48-hour (maximum) work week, a reduction from 80 hours. Another indictment laid against manufacturers by small buyers was that, in order to provide silk stockings for such prices as 49 to 59 cents, there has been recourse to cheapening. The buying fraternity, with a reasonable number of exceptions, grants itself unlimited license for charging the ills of the retail trade to manufacturers. This seems comforting to the buyer with a grouch over conditions to which numbers of buyers, by the confessions of some, were contributors, in battling for profitless mill prices and encouraging the retail clientele to resist advances.

A small group of manufacturers discussed informally the filing of a request for a ruling on the question whether the Berkshire $5.75 price was not a violation of a provision of the code prohibiting the selling of hosiery below cost, some contending that on a 24-hour week shift schedule the cost exceeded the company's sales price. It was not in evidence on the occasion of the discussion that the stockings so priced had not been made while plants were operating on 40-hour shifts, and, the pow-wow simmered down to an admission that cost in some plants exceeds it in others. So, the matter was dropped. And now a few hosiers are interested in a proposal for establishing a formula for ascertaining overhead, as semi-officially considered. This would appear to dovetail into a plan of the Bureau of Hosiery Standards, Inc., promoted by Charles W. Fischer, New York, formerly associated with the Revere Hosiery Mill at Riverside, N. J. Collaboration with the American Standards Association, National Retail Dry Goods Association and the American Home Economics Bureau is planned; also laboratory tests of hosiery numbers submitted by manufacturers contemplating utilization of the Fischer organization's stamp of approval, for which a fee is to be paid, as a means for raising a fund for advertising mills whose lines have been adjudged entitled to use the seal of approval.

Standards of construction for staple types of hosiery are being studied by the National Association of Hosiery Manufacturers, it is officially stated, with the observation that "if and when these standards have been evolved and put in effect, they are likely to prevail against any other standard." From which manufacturers on the side lines deduce that competition in the establishing of standards seems to be brewing independently of the Textile Patents Corporation, which proposes certain standards for license to manufacture ringless hosiery under inventions which the corporation controls. To which might be added that, with hours of production set by legislative enactment, construction standards established, a uniform cost accounting system and no manufacturer permitted to sell his hosiery at a loss, plant owners will have little to do other than find buyers for their hosiery, see that maturing invoices are met, pay the help and compute the profits.

"What price hosiery?" seems likely to remain the paramount question while worktime schedules are made to fluctuate in efforts to find a stage of production adapted to consumptive demand. Only slight changes followed the curtailment of a week's machine hours by 40 per cent, and it appeared advances were about in balance with declines. As has been repeatedly pointed out by economists, the main difficulty is to increase or even maintain current purchasing power, with less employment for some, although putting some of the idle on the payrolls. Demand seems not to have increased with the scattering of employment among more persons and the creation of jobs under divisions of the NRA. Necessarily, it will be conceded, some time will elapse before persons long idle who recently were added to the wage lists will be able to make their buying power felt, so that it would appear that with spring on the way, there is in the foreground a potential demand for women's hosiery that has not existed for some time.

Sees Opening for Mercerized Hosiery

An unusual demand for used Model K machines noted in the past month or two is taken to mean that quite a few manufacturers are anticipating a demand for women's seamless knit. One explanation for this outburst of optimism among circular knitting interests is that increased overhead by reason of 24- to 30-hour machine weeks will increase cost of full-fashioned more, relatively, than of seamless, and that code authorities may be unconsciously making matters easier for seamless interests. Demand for Model Ks is said to run mainly to 300 needle equipment, and finer rather than coarser as an alternative. One well-known distributor of hosiery to varying elements in the retail trade says his establishment probably will stress popular price hosiery for the present, accepting the opinions of retailers who maintain that volume sales will be at prices lower than one dollar a pair.

Thomas W. Montgomery, senior member of Montgomery & Vanneman—Granite Associated Mills—suggests a broadening market for women's seamless-knit mercerized hosiery for filling a low price niche combining service, and it is regarded not improbable that the recent demand for 300 needle Model K machines really expresses Mr. Montgomery's view as to reaching a consumer element that feels forced by circumstance to forego for the time the luxury of silk stockings, for those of a more durable fabric at a somewhat less cost.

While, according to sales persons at the counters in

The work of good needles

Good needles make good fabric—clearer, sheerer fabric, with more firsts and fewer seconds.

Good needles permit higher speeds in operation with fewer shut-downs and lower production cost.

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FULL FASHIONED KNITTING MACHINE

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some of the more important retail stores, there is no accounting for woman's whims in matters pertaining to attire and form and facial "disfigurement", some believe, in view of results from somewhat recent promotion sales, that first quality seamless mercerized would be accepted generally in preference to silk menders stamped "Thirds" and priced 25 cents a pair for the sale. A store advertised 12,000 pairs at that figure, the assortment including reigning shades of fine gauge, some with jacquard lace top, double picot, semi-chiffon and service weight. In other January promotion sales prices were as high as 74 cents, but it was said by some department managers that "sales" had lost their pull and, in the long run, "did not pay," while it was believed that standard construction at popular prices adhered to would result in steadier selling, fewer complaints and establishing certain lines in consumer favor.

In the opinion of a manufacturer maintaining close relations with the more dependable retail trade, the full-fashioned industry is over-machined to a greater extent in the production of hosiery for a dollar and up than in a range downward from 89 cents, in which he looks for the freer selling during current economic conditions. In the Berkshire list of recent issue are two-thread 45-gauge and four-thread 48-gauge, both all silk, for which, it would seem, one dollar a pair would be ample, and a five-thread 51-gauge probably would return as great a profit at a dollar a pair as much of the promotion sale hosiery at odd prices.

Important department stores in each of two northern cities reported very large sales just prior to the holidays, at 75 cents a pair, for goods which the stores ordinarily would price 89 cents. Several Pennsylvania mills which ordinarily in the past two years sold a fair per cent of their capacity output were recently inviting offers to accept their 42- and 45-gauge machines for 51 gauge. The proposal was dropped when it was found that their coarser gauge equipment seemed to be acceptable only at prices for machines taken over to be scrapped.

Back in November last a statement was put forth by a leading manufacturer in Reading in comment on low prices that mills in the Reading area which were marketing 42-gauge stockings at $6 a dozen were able to do so only because they were neglecting to include certain legitimate items of cost. At that time, however, when mills were operating on a weekly maximum of 80 hours, a quotation of $5.75 was not uncommon. There necessarily was widespread surprise when Berkshire came out with the $5.75 price during a period of 40 per cent curtailment from the schedule in effect in November, and it had not totally disappeared last month. But there was a more general willingness to accept the theory that for a traditionally dull January an unduly low price was needed to keep operatives employed for the full 24-hour shifts.

It is recalled that in November last certain trade publications were giving space to complaints of buyers for the trade that the "standard for first quality goods had been lowered," in response to pressure for lower prices. One difficulty which manufacturers have not been able to surmount with the aid of any of the codes, is to accommodate those buyers who would dictate precise standards, construction and prices. A statement imputed to Eugene M. Kaufmann, Jr., in commenting on the report the firm is liquidating its business contained the explanation that "the unstable hosiery market makes it difficult and unprofitable to continue operating."

Utilizing the demand for low price full-fashioned hosiery, the Burd Knitting Mills Co. last month began a drive for business on its Lady Burd Bemberg number, 42-gauge service weight with self-picot lisle top, at $4.90 a dozen in case lots, packed in cartons of six pairs. There is in the Berkshire more recent list a Bemberg plaited foot number at $5 a dozen, with a packing allowance of 10 cents a dozen on goods in half dozens to the carton. Prices of full-fashioned, of any construction, remain at a level where good types of seamless would appear to be a pretty strong item.

Telling the Knitting Trade of A New Model for 1934

H-L *yarns*

HIGH LUSTRE

JUST as car owners are waiting for the new models in automobiles for 1934, so are many hosiery and underwear manufacturers waiting for a new and better yarn. Boger & Crawford now announce their contribution for the New Year —a new *High Lustre* yarn which is an already good yarn made even more beautiful by a new high lustre. The cost is just a trifle more than regular mercerized yarns in counts from 40/2 to 120/2. Our salesman will gladly call for demonstration on request.

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Philadelphia, Pa.

The trend of employment and payrolls in Pennsylvania hosiery mills was downward weeks in advance of the curtailment ordered by the code authority, according to a tabulation by the Philadelphia Federal Reserve Bank, showing that in December employment had declined more than five per cent from November and wages declined almost 20 per cent. These recessions were greater than in other knit goods. According to the Federal Reserve Bank's report of January, the trend of employment and wage earnings in Pennsylvania manufacturing industries had been downward since October, recent months showing improvement over corresponding months of the previous year, however.

The bank figures gibe, in a way, with hosiery statistics of the Department of Commerce for November, when there was a decline of over 1½ million dozens of hosiery, all classes, making comparison with November 1932. Orders fell off by ¾ of a million dozens and net shipments declined by more than 1½ million dozens. There was only a slight drop in unfilled orders and slight increase in hosiery in stock in mills at the beginning of December. The production sales and shipment figures would seem to indicate that the trade anticipated necessity for action such as was ordered by the code authority and approved by the NRA.

Among interesting disclosures from an analysis of the Department of Commerce November statistics is a showing of a falling off of about ¾ million dozens of cotton stockings, as if contradicting reports of a trend to the lower priced, comparison being made with November 1932. Outstanding also is the fact that production of women's seamless silk was around 150 per cent greater than in the 1932 November, while output of women's seamless rayon was 50 per cent less. Silk and cotton in combination had apparently proved in lighter demand, since women's full-fashioned of this fabric construction dropped by approximately 60 per cent and women's seamless by 50 per cent. Women's full-fashioned silk and wool declined from 10,815 dozens in November 1932 to 332 dozens in the corresponding month of last year. There were even greater relative declines in rayon and wool numbers for juveniles and infants.

The Merit Associated Hosiery Mills aims to ascertain whether the autograph of some celebrated motion picture star on a stocking will prove a help in its sale. The company is offering three numbers, priced $6.25 to $8.35, which were used in a January promotion sale, with what effect is not stated. The "movie" star whose autograph appears on the stockings says they are worn by her in Hollywood.

It appears the opinion generally among manufacturers and their trade that the introduction of novelty construction better had be postponed; that about the only novelty the average buyers would be willing to consider is a distinctively price innovation. Not many of the novelties of the past fitful 15 years since the War survive. A notable exception is the French heel. It entered the staple class after about one year as a novelty, it is recalled by hosiers.

The Kant-run type of stocking was a novelty in 1932. According to some department managers' views, at the time, its introduction was not properly handled by the several mills producing it. While it could not "run", it would not move across the counter in sufficient volume to be interesting. Immune to runners though it was, and still is, women would not take to it because it was on the mesh order. Yet many of these same women only a few months earlier were mesh minded, and the more ridiculous the net, the better some seemed to like it. The stores seem unlikely to be pestered with offerings of innovations in women's stockings for some itme.

The Oscar Nebel Co., Inc., has developed a fair measure of interest in its "two-way" full fashioned number, so constructed as to equalize the cross strain of that part of the fabric covering the foot. It has merit, and the Hanes Associated Mills, Inc., is sole distributor.

The H. C. Aberle Co., Philadelphia, recently put on the market a three-thread 48-gauge stocking that is sold under a positive guarantee of perfection, and is said to be the one number in which the company has been enjoying a steadily increasing volume of business. Each pair is rolled and sealed separately in cellophane, the shades being thus read-

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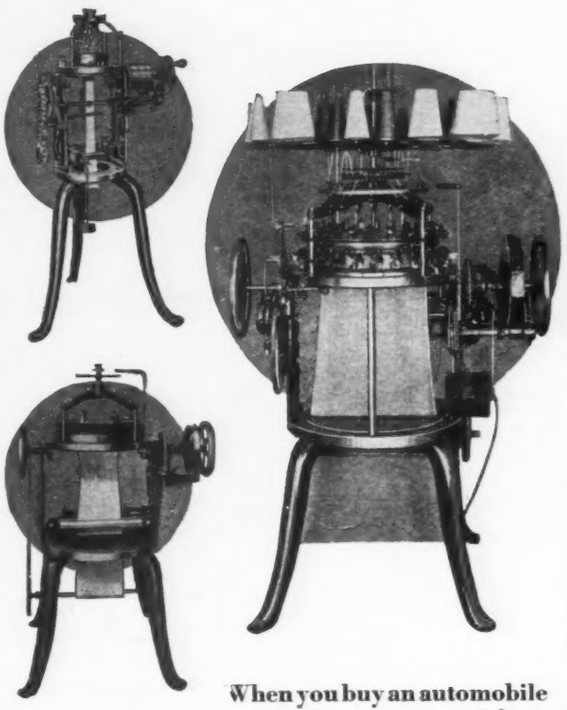

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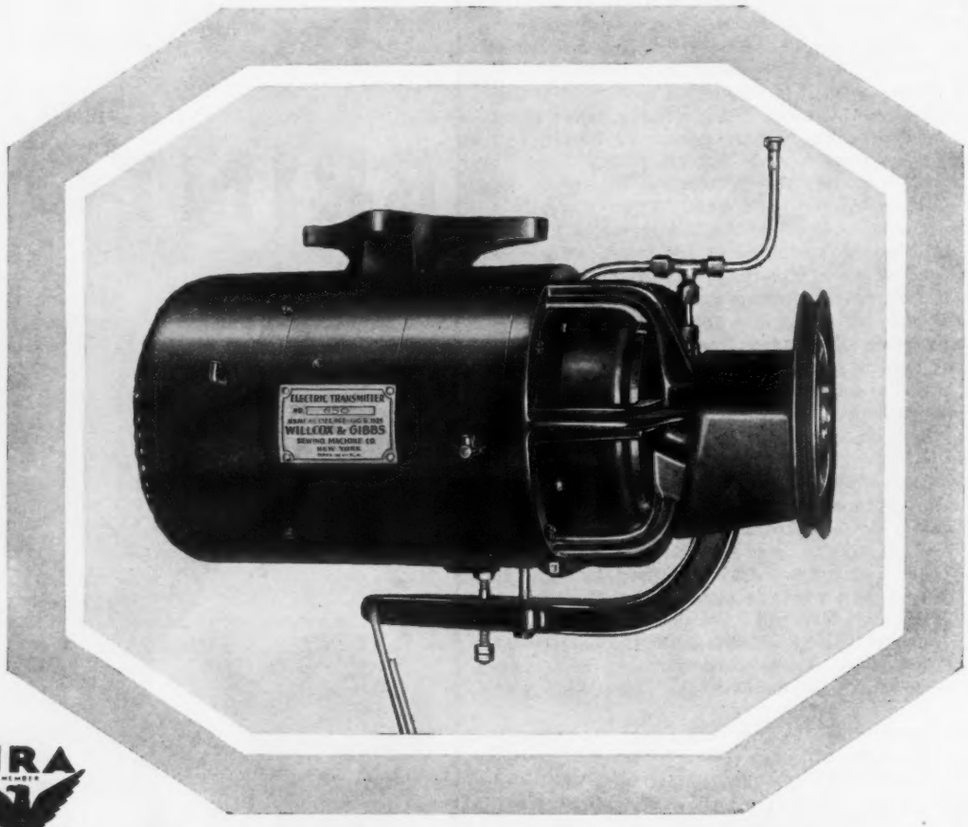

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counts. It was not many weeks ago that first announcements were made of the Hanes Associated Mills taking over the Oscar Nebel account, Charles Chipman's Sons Co., Inc., being appointed sales agent for the Drexel (N. C.) Knitting Mills Co., and the Cannon Mills announced as selling agents for the Aycock Hosiery Mills, ranking among the larger producers of anklets and kindred lines. Shreve & Adams Co., Inc., one of the oldest hosiery selling agents in New York, with possibly one or two exceptions, on January 1 took the exclusive sale, to the wholesale, trade of the lines of the Federal Knitting Co., Philadelphia, comprising women's and men's silk full-fashioned-ingrain silk. two-tone lisle, plain lisle and plain silk. R. A. Davis, formerly associated with the H. C. Aberle Co., in charge of the New York office, and now vice president of Frank S. Henderson, Inc., hosiery selling agents, is reported signing up several full-fashioned mills.

Wage Increases Adopted

With the idea of establishing a more equitable wage scale in the full-fashioned hosiery industry, the Full Fashioned Hosiery Association, Inc., at a meeting in its rooms in Philadelphia on January adopted the following increases, ily distinguishable. A purchaser does not handle the stocking until she has broken the seal, the company's guarantee being her safeguard. Retailers offering the sealed stockings carry a half dozen or more in flat unsealed packing, as an aid to moving the sealed. The unique form of packing represents a considerable item in the cost of marketing this "Aberlepak" line.

Trends in Distribution Methods

Somewhat recent changes by manufacturers in their channels of distribution have given rise to a feeling in the trade that there is a tendency among mill men to concentrate on the older or more powerfully organized selling agents, and that eventually there will be fewer of the smaller establishments of this character and that therefore the more obscure mills will comprise the bulk of their ac-

per dozen, effective January 22: Leggers, 5½ cents; footers, one cent; toppers, 1½ cents; seamers, one cent; menders and examiners, combined, one cent.

The question of supplying needles to knitters was referred to a committee of members for a report at the association's next meeting, to be subject to the call of the president.

Following adoption of the increased rates of pay for six operations a member wanted to know "where are we going to get the money for paying the increases?"

Comment by members indicated a slightly improving market situation—whether due to the curtailment by 40 per cent from 80 hours remained conjectural—with some stocks carried over from last year still to be disposed of. With demand increasing, manufacturers feel, the increase of 10 cents a dozen in cost will be passed to buyers, meeting less resistance than at present. A fairly good market was looked for by the middle of February.

Appointment of Stanton D. Sanson, president of Ajax Hosiery Mills, Phoenixville, Pa., to the Philadelphia Regional Labor Board by Robert F. Wagner, chairman of the National Labor Board, was accepted in hosiery manufacturing circles in the Philadelphia area as indicating a purpose on the part of the National Board to give broader recognition to the open shop group of mills. The announcement appeared simultaneously with announcement of wage increases voted by the Full-Fashioned Hosiery Association Inc., comprising largely open shop mills in the Pennsylvania and adjacent full-fashioned fields.

Unexpected Delay in Getting Started with Heavy Weight Underwear

Although it had been predicted generally in the cotton underwear New York primary markets that most mills would open their heavy weight lines during the week of January 15, and that a fair amount of business would be placed, interest so lagged that the formality was postponed. There may have been several specific reasons for this

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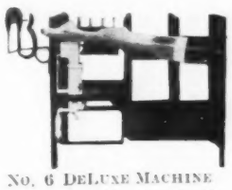
What it is: A new process that in one operation turns loss into profit by eliminating three major difficulties in hosiery production.

Correct foot sizing . . . finding weak places in fabric . . . exposure and removal of imperfect workmanship.

An advanced process brings new economies to the manufacturer and more customer satisfaction to the retailer.

Correctly sized feet eliminates undue wear at toe and heel when feet are short as well as the equally troublesome long feet. Feet that are unevenly matched after laundering are also prevented.



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Edward R. Ammon, Inc.
READING, PA.

change of front on the part of mill managements. There was of course disappointment over the official announcement of the previous week that the government would not at present buy the underwear for which bids were opened a month before. As the bids were received also for other cotton knit goods, it was estimated that with the government awards of contracts there would be assurance of around 5,000,000 pounds of cotton yarn being taken out of the market during the first quarter of 1934. This estimate had to be revised when federal emergency relief authorities announced that only blankets would be purchased and it appeared quotations on underwear yarns also might receive like treatment.

In the earlier discussions of an opening date for heavy weight underwear it appeared as the consensus that there would be little departure from the then effective list prices, prevailing at the tail end of the past season. In the circumstance it was suggested in the jobbing trade that previous ideas as to prices for fall and winter of 1934-5 also might have to be changed. In any event, it was in evidence that buyers were disposed to be in no hurry about placing initial contracts, so long as there was expectation of developments at Washington that might have a commodities market influence, in one direction or another—jobbers affecting to believe that changes in policy would favor conservative distribution, as in the case of the government deferring the purchase of the 500,000 dozen underwear garments for which bids were invited.

Near future conditions in the underwear primary markets so far as concerns heavy weights were last month purely a matter of conjecture. In favor of immediate conservative contracting was the fact distributors and retailers had been able to make a cleanup of stocks and that mills ought to be given prompt support for contributing to the movement for averting any break in employment. But it appears sentiment is secondary to such matters as price and credit. The recent heavy weight season proved fairly profitable for jobbers and the retail trade, and at this juncture there is little inclination to speculate on the unknown.

Summer weight underwear lines that are well established in the trade under nationally advertised brands ceased some weeks ago to be a problem so far as relates to forward buying. Commitments have been on a relatively substantial scale and details have followed promptly, so that shipments will continue to go forward at a good stage. The outlook for women's cottons would be brighter but for the drive in behalf of rayon which has to compete with the lowest priced silk at its lowest price in years.

Low-price silk necessarily may be expected to crowd hard on rayon in combination with cotton, taking the place, in large extent, of the man-made fibre, and promoting the use of cotton with silk. This seems to have been in the minds of cotton yarn interests when announcement was made a few weeks ago of the appointment of E. L. Starr as director of educational and promotion work for the International Silk Guild. Mr. Starr formerly was managing director of the Rayon Institute of America, Inc., and later filling a similar position with the Dureen Association of America.

A well known knit goods jobbing house, for years distributing in national territory, is stationing a representative in a Georgia city, in the expectation of re-establishing its southern trade, which, an executive states, was neglected after depression had become deeply rooted. Now, he states, sections of the South where his house formerly had good business, seem to offer better opportunity than some of the industrial territory in the Middle States, which also was neglected by several distributors, "including ourselves," said the jobbing establishment executive who is supervising the activities in its several knit goods divisions. "Most of our former customers in the southeastern field have survived the depression," the jobber stated, "and are catching up with payments that had become past due."

Manufacturers of bathing suits in actively pushing for business recently entered upon their first real knitted outerwear campaign for 1934, under circumstances which have the effect of retarding initial sales, yet presenting a situation which might be expected to influence wholesale distributors to place a large part of their prospective business early.

In the present temper of professional trouble makers, and from the fact that the knitted outerwear trade has, mostly, had little difficulty with its operatives, some feel a strike is among the possibilities so soon as mills become seasonally active. This influences jobbers differently, most buyers feeling that it might be wise to enter into contracts with mills so long as the trouble—which never may arise—is only a possibility and probably remote at that.

As a distributor pretext for deferring contracts is the tenacity with which spinners have been adhering to prices during full three full months of stagnation in the worsted yarn markets—several important concerns confessing that in that time they have sold less than five per cent of normal weights for an average season. Thus far, wool values have served as a backlog for worsted yarn prices, only a few sellers, having cumbersome stocks, accepting offers of ten to twenty cents a pound under the market.

Jobbers profess to fear a decline in yarns and, in sequence, a drop in current prices for swim suits. A rational view of the wool situation would make it appear that price changes will be upward rather than downward. It seems apparent, however, that while yarns are allegedly high and the effect of an indicated U. S. dollar with a leeway of ten cents in its ultimate revaluation remains a matter of conjecture, primary market trading in knitted outerwear may show no activity until merchants' needs become urgent.

It appears from dependable reports seeping through that some swim suit manufacturers are manipulating for lower cost suits, in response to alleged jobber demand for prices showing practically little or no advance from current ratings. There is, in any event, increasing inquiry for worsted yarn plated on cotton for the cotton-back garment, and cotton core yarn. Mixture with cotton is said to be somewhat common for sweaters and rather experimental thus far as to bathing suits.

Some spring business in sweaters is being written by the better established mills, and straggling orders for bathing suits for the jobbing trade are being entered. There is seen the probability of a sudden crashing of an accumulation of demand and all the business that mills can take care of during the second quarter of 1934, preceded by a gradual strengthening of the market in the meantime.

Capacitors for Dusty Atmospheres

A totally enclosed non-inflammable capacitor has been announced by the General Electric Company for use in dusty atmospheres. The dust-tight capacitor is intended not only for plants such as grain mills where dust is prevalent but has proved in demand for textile mills where lint has been troublesome in the past. This new capacitor is treated and filled with Pyranol which is non-inflammable and which has extraordinary insulating and dielectric properties. In addition, this material has made possible a capacitor of smaller size and weight, which is of particular advantage in many applications.

The capacitor dielectric itself is hermetically sealed, and connections are brought out through bushings into a dust-tight box which surmounts the unit. The dust-tight box is provided with conduit holes, each fitted with a dust cap, and contains standard N.E.C. indicating fuses which can be inspected by removing the gasketted cover. This process is very simple since the cover is held in place by two wing nuts mounted on hinged studs. The use of individual indicating fuses is a feature of all General Electric capacitors.

QUITEX
SPUN RAYON

Textile mill men who are taking the pains to investigate the practicability of the new Quitex Spun Rayon are finding profit and satisfaction in its fashionable dull lustre and unusual strength.

To those who see the possibilities of Quitex, and who appreciate the Quissett 20 year tradition of fine cotton spinning, are assured added impetus to fabric sales.

It will be worth your time to write for samples of Quitex Spun Rayon.

Quissett Mill
New Bedford, Mass.

Wm. H. Butler, Pres.
Edward H. Cook, Treas.
Thomas F. Glennon, Agent

QUISSETT MEANS QUALITY

AVONDALE MILLS

Sycamore, Ala. — Sylacauga, Ala.

OFFER THE ADVANTAGES OF LARGE FACILITIES — QUICK SERVICE

THEY CAN READILY SUPPLY ANY TWIST, PLY, OR PUT-UP IN CARDED OR DOUBLE CARDED YARNS FOR KNITTING, WEAVING OR INSULATING IN ALL NUMBERS FROM 3's TO 40's.

Selling Agents:

WATERMAN, CURRIER & CO.
INCORPORATED

BOSTON CHARLOTTE NEW YORK
PHILADELPHIA READING

It's the Consumer who must be satisfied

The various processes used in the manufacture of any product are adopted with the intent of making the product satisfy the ultimate consumer.
That's one reason why so many Hosiery Manufacturers are using "Brosco" Finishes to obtain any desired degree of Low Lustre, Water and Spot Proofing, Softness and Elasticity, *all in one bath.*

"Brosco" Dull Finish
Finishing Compound S. P.
"Brosco" Scroop Oil

They withstand repeated washings, for they're "fixed in the fibre."

May we send you further details—or have one of our practical men call?

NRA WE DO OUR PART

Brosco Product
SCHOLLER BROS. INC.
MFGRS. of TEXTILE SOAPS, SOFTENERS, SULPHONATED OILS & SPECIALTIES
AMBER and WESTMORELAND STS., PHILADELPHIA, PA.
and in ST. CATHARINES, ONTARIO, CANADA

REVIEW OF THE YARN MARKET

Philadelphia, Pa., January 17, 1934.

A STEADY hardening in prices for cotton yarns, and latterly somewhat more stir in weaving numbers, was accompanied by a more buoyant spirit in the Philadelphia yarn trade. Recovery from the jolt caused to sellers and their customers by the action of Federal Emergency Relief authorities in calling off the acquisition of underwear, hosiery and sweaters for which bids had been received a month before, was rapid, and could be attributed in part to an upward tendency in cotton.

By the middle of January some houses were having a repetition of the modest spurt in September last, when fair weights of underwear yarns from southern spinners were contracted for. On that occasion, however, prices were relatively soft. In January spinners were quoting the highest prices in some months. Carded singles were still obtainable for 28 to 28½ cents for 10s, from, presumably, interests which had bought heavily in anticipation of 5,000,000 pounds of yarn being required for the goods which it had been intended the government would take over for emergency relief. Offerings on this basis were taken over as fast as they came out, as southern spinners were quoting at the time 29 to 30 cents, while facing a prospect of increasing cost under the greater overhead. It was pointed out that with a maximum 48-hour week, in comparison with more than 100 hours a year ago, nothing short of a tumble in cotton would avert a rise in yarn prices. That 12-cent cotton for a reasonably long pull was far more likely than any material recession for only a short period was the general impression, contributing to the attitude of dealers in adhering to the indicated firmness of spinners toward maintaining values.

Following announcement of the government's withdrawal from the market as purchaser of underwear, stockings and sweaters for emergency relief, interest in underwear yarns waned for a time. That action, it was maintained, disturbed manufacturers who had submitted low bids and felt assured of contracts being awarded them, and disappointed sellers, and it was an opinion in the trade that only the fundamental strength of the market prevented a tumble in prices. In any event, in less than a week after receipt of the unwelcome news, yarns moved up virtually a cent for coarse to medium numbers.

Outstanding as an encouraging aspect of the market as viewed by Philadelphia traders was a broadening interest in the range of weaving yarns, until 20s/2 warps were quoted firmly 32 to 33 cents. Yarn inquiries were taken to indicate a budding demand for toweling, sheeting and several of the major staples. Barring unforeseen happenings, it seemed that the markets for cottons were at the dawn of a period of activity—a seasonal going forward. Some yarn contracts were placed, for deliveries running to April.

There was some disappointment over the failure of combed peeler yarns to respond promptly to new ratings following the establishing of a curtailment of operation to 70 per cent of previous hour schedules. Dealers were reported by buyers making a determined effort to move prices to higher levels, and buyers as a body were represented as deferring the placing of orders at the advances. Single 30s and finer to 38s were quoted one to two cents up from the early January ratings, but sellers said they were having difficulty in following increases in labor and raw material cost, with buyers affecting apathy.

Prices for mercerized yarns were moved up by a cent or two, but there still were offerings at three to four cents below quotations accepted in the yarn trade as representative of the market. It was the general feeling, however, that combed and mercerized yarn prices were further from parity with operating cost than are carded.

Philadelphia prices published January 16, follow:

Single Skeins

4s to 8s	28	10s	28½
12s	29	14s	29½
16s	30	20s	32
24s	34½	26s	35½
30s	37½		

Single Warps

10s	29	12s	29½
14s	30	16s	30½
20s	31	26s	35½ @36
30s	37½ @38		

Two-Ply Skeins

8s	28½	10s	29½
12s	30	14s	30½
16s	31	20s	32
24s	35½	26s	36
30s	38	40s	47½

Two-Ply Warps

10s	30	12s	30½
14s	31	16s	31½
20s	32½	24s	35½
26s	36½	30s	38½
40s	48½		

Frame Spun Carded Cones

8s	28	10s	28½
12s	29	14s	29½
16s	30	18s	30½
20s	31½	22s	32
24s	34½	26s	35½
30s	37½	40s	46½
30s double carded			39½
30s tying-in			36½

Carpet Yarns

8s and 9s white warp twist	28
8s tinged tubes	27
8s part waste	25½

Two-Ply Combed Peeler Skeins and Warps

8s-10s	36½	20s	41
24s	42	30s	46
40s	52	50s	57
60s	63	70s	73
80s	84		

Single Combed Peeler-Yarn on Cones

10s	36	14s	37
16s	38	18s	39
20s	40	24s	41
30s	43	36s	46
38s	49	40s	50
50s	55	60s	62
70s	72	80s	83

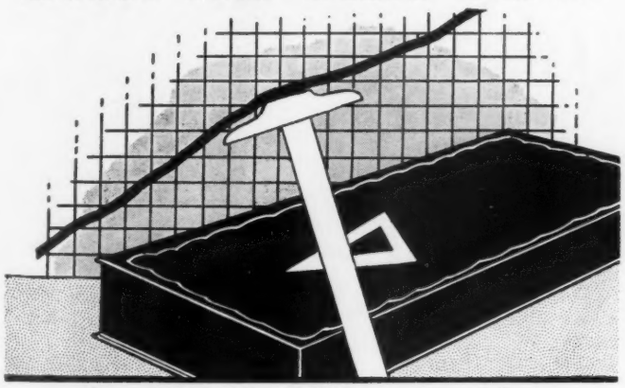
Mule Spun Carded Yarn on Cones

10s	29	12s	29½
14s	30	16s	30½
18s	31½	20s	33
24s	35	26s	36
30s	37½	40s	46½

Mule Spun Combed Peeler Yarn on Cones

10s	36	12s	36½
14s	37½	16s	38½
18s	39½	20s	40½
22s	41	26s	42
28s	43	30s	44
36s	47	38s	49
40s	50		

Boost Your Sales Curve



with individually styled boxes

Higher sales curves follow when proper care is taken in styling boxes for textile products. Paper boxes by Old Dominion are scientifically designed to your individual needs by experts who know merchandising as well as box making. Write nearest plant for samples, prices.

OLD DOMINION BOX COMPANY, INC.
Lynchburg, Va.
Winston-Salem, N. C. Burlington, N. C. Charlotte, N. C. Asheboro, N. C.

quality OLD DOMINION Paper Boxes

The right

NRA MEMBER WE DO OUR PART

SOAP, OIL *or* SOFTENER

There's no place for "trial and error" processing in the new shorter hours—higher wage schedule of today. Your finishing materials must be right.

Laurel Soaps, Oils and Softeners are right. They are made from the best obtainable raw materials, checked and rechecked in our laboratory to give you the desired results without chance. That's why Laurel Products cut costs for textile manufacturers.

Our booklet, "Your Treating Problems" will show you how others have cut costs. Send for your copy.

Laurel

SOAP MANUFACTURING COMPANY, INC.
WM. H. BERTOLET & SONS
2600 E. Tioga Street, Philadelphia, Pa.
WAREHOUSES
Paterson, N. J. Chattanooga, Tenn. Charlotte, N. C.

BONE-DRY
HOSIERY FINISHING BOARDS

PEARSON
HARD MAPLE
HOSIERY FINISHING BOARDS

THAT WORK ABSOLUTELY SMOOTH

The famous bone-dry, unshrinkable, well finished boards that give universal satisfaction.

Especially recommended for silk and chiffon hosiery. Satisfied users the country over. A list of these users gladly furnished to any mill on request.

JOSEPH T. PEARSON & SONS CO.
Kensington & E. Boston Aves., Philadelphia, Pa.

PREVENT OIL STAINS

IT'S TOO LATE when the tell-tale stain appears on the goods. Reduce staining from oils, graphite and soft metals by cleaning up with Metso, Sodium Metasilicate.* It removes oil and dirt quickly and thoroughly. Metso can be used on all types of metal.

Samples and information on request

PHILADELPHIA QUARTZ CO.

General Offices and Laboratory: 125 S. Third St., Philadelphia, Pa.
Chicago Sales Office: 205 W. Wacker Drive. Stocks in 65 cities.
Sold in Canada by NATIONAL SILICATES LTD., Toronto, Ontario.
USE STAR BRAND SILICATE FOR BLEACHING

*U. S. PAT. 1898707

No More Secrets

The Audit Bureau of Circulations was formed by large advertisers and publishers to put a ban on circulation secrets. Publications willing to have their records checked by impartial auditors belong to the Bureau, and the number of papers they sell is published to the world. No one doubts the "A. B. C." report. It eliminates unknown quantities.

COTTON

ATLANTA, GEORGIA

STARCHES

Why

TEXTILE MANUFACTURERS CONTINUE TO USE . . .

THIN BOILING STARCHES

Eagle One Star
Foxhead Eagle Two Star
Eagle Three Star
Eagle Four Star

THICK BOILING STARCHES

Globe Pearl Buffalo
C. P. Special Famous N.
Hawkeye Peerless

DEXTRINS

White Dark Canary
Canary British Gum

WARP sizing as well as printing, dyeing and finishing processes offer many problems in the use of starches, dextrins and gums. The selection of the proper products is of great importance. Listed above are products available for the purposes and conditions of exacting textile manufacturers.

These starches, dextrins and gums are manufactured by carefully controlled and standardized methods. Purity and uniformity are guaranteed. Economy and efficiency are attested by the constantly increasing number of users who are getting satisfactory results.

IMPORTANT

Our research department will be glad to furnish additional information regarding the types and uses of these and other products as applied to the special needs of the Textile Industry. Write to—

CORN PRODUCTS REFINING CO.

17 Battery Place NRA New York City

DEXTRINS AND GUMS

Vision--
In times like these, when mere man attempts to encourage (or upset) the normal workings of economic laws, a satisfactory vision is at least difficult. But let's not eliminate all the fundamentals. And, of these, quality buying, consistent with price, is more important. That is where we enter into your picture.
QUAKER CHLORAL
Sulphonated Olive, Castor, Neatsfoot Oil and Specialty products. Practical demonstrations with no obligation.
QUAKER CITY CHEMICAL COMPANY
PHILADELPHIA, PA.
KNOXVILLE, TENN.
HAMILTON, ONT., CAN.

2 ESSENTIALS

for highest quality bleached goods at lowest unit cost—

BECCO Concentrated HYDROGEN PEROXIDE

Up-to-date mills all over the United States have discovered these two **modern** essentials to a superior and economical bleach. **Becco** Concentrated Hydrogen Peroxide **plus Becco** Technical Service means a careful, accurate application of peroxide to **your** bleaching requirements. The result, to which so many mills bear testimony: the highest quality bleached goods at lowest unit cost. **Becco** can be adapted to the bleaching of any fabric—raw stock, yarns, knit goods, hosiery, piece goods, specimens, etc. Write for full details.

BECCO TECHNICAL SERVICE

BUFFALO ELECTRO-CHEMICAL CO.
BUFFALO, NEW YORK
BOSTON NEW YORK PHILADELPHIA CHICAGO CHARLOTTE
TORONTO MONTREAL

What will Sell in the 1934 market

THOSE textile products that will prove most profitable sellers in the 1934 market will be the ones that are more carefully processed and have a quality appearing finish. Look to your processing—it is more vital than ever in moving your sales curve upward. Remember that every HART PRODUCT is made under scientific supervision and control which guarantees the highest possible standard of uniformity. A constantly increasing number of the leading textile manufacturers are relying on HART PRODUCTS to reduce costs and improve the quality and appearance of their fabrics.

Ask for circulars on any or all HART products.

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PRODUCTS
BASED ON RESEARCH

Sulfonated Oils
Silk Soaking Oils
Rayon Oils
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Anti-Mildew Agents
Degumming Oils
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Wetting-out Agents
Kier Oils
Softeners
Finishing Oils
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Cotton Warp Dressing

THE HART PRODUCTS CORP.
Textile Processing Specialists
1440 BROADWAY NEW YORK, N. Y.

MORE THAN 6 MILLION SPINDLES

are now equipped with the special improved synchronized device for

RAW COTTON LUBRICATION

BY THE
BRETON MINEROL PROCESS
PATENTED

"MEON"•

COLD WATER CONDITIONING FOR COTTON

A NEW HIGH *in Efficiency* at a NEW LOW *in Economy*

USE IT • with any conditioning machine.

IN COLD WATER • it can be atomized and distributed in place of steam.

MEON • prevents rust formation. Makes rust-proof bobbin rings unnecessary.

MEON • helps retain moisture in the yarn—stops kinks.

ADD 1 GALLON to **99** Gallons of COLD WATER.

Write for full information

BORNE SCRYMSER COMPANY
Originators of the BRETON MINEROL PROCESS for CONDITIONING COTTON
17 BATTERY PLACE · NEW YORK

TEXTILE DEPURATOR

TURNING THE WHEELS OF PROGRESS

NEUTRALITE DETERGENT

The Comparative EFFICACY and LOW COST of

DEPURATOR XX
for Cotton

NEUTRALITE XX
for Silk and Wool

NEUTRALITE XB
for Heavily Oiled Rayon and Wool

Cuts the Corners off Production Costs while giving a Better Quality Product.

TIME IS ESSENCE

To shorten the Boil Off period Saves Power and Labor,
To Increase the Factor of Safety of the Fabric by a Low and Controlled pH value,
To Insure thorough Penetration of dyes and the Leveling of Shades,
To reduce Re-dyes and Seconds to an Absolute Minimum.
These are the Certain and Sure

RESULTS

From the use of
DEPURATOR XX
NEUTRALITE XX
NEUTRALITE XB

"The proof of the pudding is in the eating."

Detergent Products Corporation

P. O. Box 1725
307 Peachtree Bldg.
Atlanta, Georgia.

CLEANING IACO COMPOUND

TRISODIUM PHOSPHATE

Nearly Every Cotton Mill Uses Some Kali Oils

What is your problem? Our Research Department will tell you how to use certain Kali products to improve every process from the spinning to its final finishing of either woven fabrics, knitted fabrics or cotton bats.

To reduce your soda and get a softer boil use **KAY**—Kay has slight bleaching action and if any starch is present on warps it makes the starch soluble and easily washed out.

Use **KALPINOL** (Sulphonated Pine Oil) for boiling out in kier before bleaching. It removes the natural oil and waxes from cotton. Reduces capillary action and allows alkalies to penetrate and give good even boil thus assuring quicker and more uniform bleaching.

The **KALI** Mfg. Co.
Manufacturing Chemists
1410 N. Front Street, Phila., Pa.

SOLVAY
TRADE MARK REG U S PAT. OFF.
PRODUCTS

CAUSTIC SODA
SOLID—GROUND—FLAKE
for MERCERIZING

Solvay Caustic Soda is made from Soda Ash manufactured by the Solvay Process. The same high degree of technical supervision and the same scientific methods are exercised in producing Solvay Caustic Soda that are followed in making Solvay Soda Ash—the standard since 1881.

SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
61 BROADWAY NEW YORK

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Improve your Scouring
. . . to get HIGHER QUALITY
ACETATE-RAYON FABRICS

CEL-RAY SCOURER

- THOROUGHLY removes all sizes and oils
- Reduces Boil-off time
- Prepares goods for perfect dyeing and finishing
- Softens fabric
- Unaffected by hard water

In processing Acetate-Rayon Fabrics, the scouring operation often holds the key to quality fabrics.

Poor scouring always results in uneven shades and poor finish. Aware of this, the ONYX research laboratories developed CEL-RAY SCOURER to overcome present difficulties and improve on the results thus far obtainable.

CEL-RAY SCOURER is newly developed . . . especially compounded to meet the requirements of Acetate-Rayon Fabrics. ***Write for sample and details, without obligation.***

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ONYX OIL & CHEMICAL CO.
Specialists on Finishing Materials.
Jersey City, N. J.

Midw. Repr. MAHER COLOR & CHEMICAL CO., Inc., Chicago.

100% PRODUCTION *assured!*

TRY "Victor Mill Starch" • a thin-boiling, highly penetrative starch that carries the weight into the cloth • ask for—

VICTOR MILL STARCH

"The Weaver's Friend"

Distributed By

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BOSSON & LANE, INC.

Manufacturing Chemists
Established Jan. 1, 1895
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High Grade Castor Oil Products
Sulphonated-Saponified

Soluble Oil — Para Soap Oil
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PENTRALYN, a superior assistant for Beam, Spool, Bobbin and Package Dyeing.

Bleach Softener CSO, Finishing Sizings and Softeners

VICTROLYN, the economical assistant in warp sizing. Penetrating, Lubricating and wholly efficient.

B & L Bleachers' Bluings and Violet Tints

GOOD MONEY VALUES-FREEDOM FROM WORRY

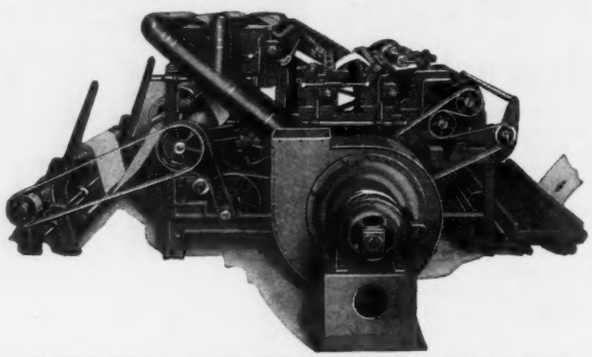
MISTER COTTON MILL-MAN

We will put new Automatic Cotton Shears or automatize the old shears in your cloth-room and guarantee to save you the entire investment in a short time and we will do this on a free trial.

OUR AUTOMATIC NEVER MISSES A SEAM OR SMASHES A BLADE

COTTON SHEARS
save many girls
Clean the cloth
perfectly from
threads and dandruff
Better Cloth
at less cost

Sells easier
and
they come again



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Make your old shears
automatic
and save a tender
for each machine
Entire cost saved
quickly
Then handsome
dividend monthly

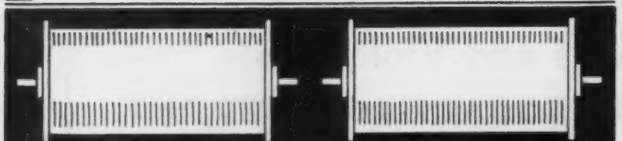
Let us make you
a proposition

P. B. Raiford, Jr., Concord, North Carolina

SOUTHERN REPRESENTATIVE

Parks & Woolson Machine Co., Springfield, Vt.

LOWEST COSTS
from
Spinning Bobbins
to
Warp Beams on
ABBOTT WINDERS
Let us tell you why



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With the naked eye you can compare the tough, closely knit fibres of **Gallun's Roller Calf** with the coarser structure of older types of roller covering. Hence the **substantial economies** effected in the cost of leather, roller cloth, and labor in the roller shop. Inquire.

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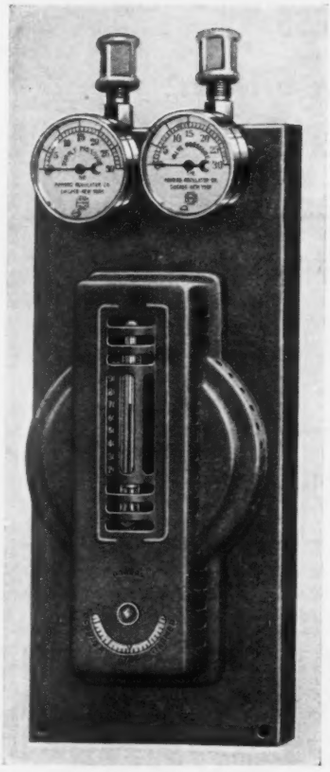
Boston Branch, 11 East Street—Southern Representative, Clarence Ochs, P.O. Box 1603, Greeneville, South Carolina

GALLUN LEATHERS

ALWAYS STANDARDS OF EXCELLENCE

POWERS
Room Temperature Control



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3 Improves Quality of product

4 Increases Output of workers and machines

If room temperatures in your mill are "controlled" by hand or by worn-out obsolete controls don't be surprised if you find temperature fluctuations of 5 to 15 F. above or below the proper point. By stabilizing room temperature in each department POWERS *automatic* control will immediately help you to gain the valuable advantages listed above. May we submit an estimate? There's no obligation.

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40 Years of Specialization in Temperature Control

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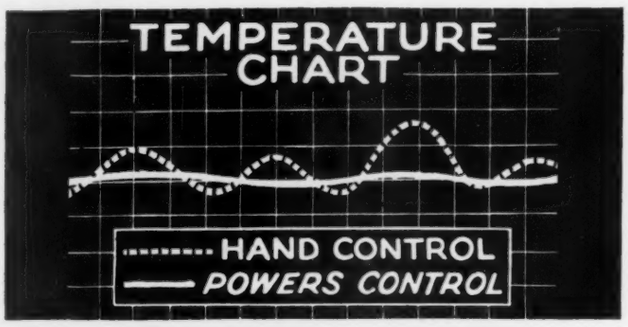
BIRMINGHAM, Homewood Stat., Box 27 READING, 1121 No. 11th St.



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Your per-spindle hours are governed by the Code, but your per-spindle PRODUCTION is governed by how well and how fast your travelers ride your rings. In other words, the average frame can be speeded up just as fast as the traveler-and-ring action will permit. Worn rings are rough riding. New DIAMOND FINISH Rings furnish a smooth path to a substantial per-spindle increase in your production.

Free samples upon request

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Devoted to making "DIAMOND FINISH" Spinning Rings Solely Since

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IS ONE OF THE OUT-
STANDING FEATURES
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Satisfactory Service Since 1919

REEDS
Cotton-Duck-All Metal
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New Design POSITIVE CLAMPHOOKS

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Have proved their merits in the textile industry for

EXHAUSTING
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NAPPERS and
DYE HOUSE

Propellair rounded or curved entrance ring is just as important to good fan performance as is the motor and propeller.

Write today for more data.

PROPELLAIR, INC.
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Roy Grinders for Improved Stock

Roy Grinders for Economy

All Makes of Grinders Promptly and Thoroughly Repaired

B. S. ROY & SON COMPANY
Established 1868
Worcester, Mass., U. S. A.

for quality fabrics

USE THE HERMAS BRUSH & SHEARS

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During the past 10 years there has been a definite trend toward Hermas Brushes & Shears.

This trend has been greatly accelerated during the past year because of government regulations.

As a result there are today over 3 times as many Hermas Brushes and Shears in operation as all others combined.

The reasons for this outstanding leadership are two:

1—The greater accuracy of machine work as compared with hand operators, resulting in higher, more uniform production.

2—The unique mechanical advantages of Hermas machines, which put them in a class by themselves.

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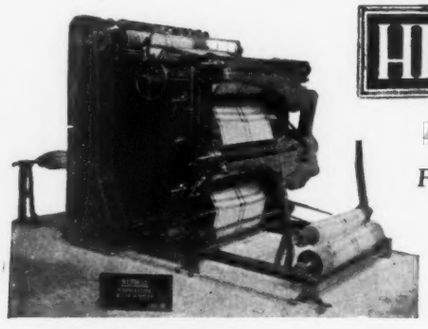
Cut Your Cloth Room Costs 80%

Hermas Brushes and Shears are being used on all types of fabrics. No matter what you are manufacturing, there is a Hermas machine that will do the work better, faster, and CHEAPER — far cheaper—than it can be done by hand, or by any other means.

Manufacturer after manufacturer, after installing Hermas machines, has effected savings of from $50 to $200 a week.

We don't ask you to believe this without proof. But you do owe it to yourself and your stockholders to investigate the facts. Write us to-day for full details.

Remember — A dollar saved in your cloth room is worth just as much as one saved in your spinning, warping, or weaving departments.



HERMAS

4-BLADE

Fully automatic

BRUSH & SHEARS

Trim to within 1 foot of seams (You don't have to hand pick 6 to 8 yards at each seam)

HERMAS MACHINE CO.

Cloth Room Machinery

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★ **Record No. 2.** From South Carolina comes a report on Bondaron Pickers. The superintendent says pickers placed on the looms **three years ago** are still giving good service!

★ **Record No. 3.** A 60% DECREASE in loom leather costs resulted when a Georgia mill decided to standardize on Bondaron.

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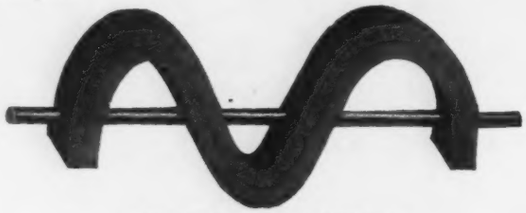

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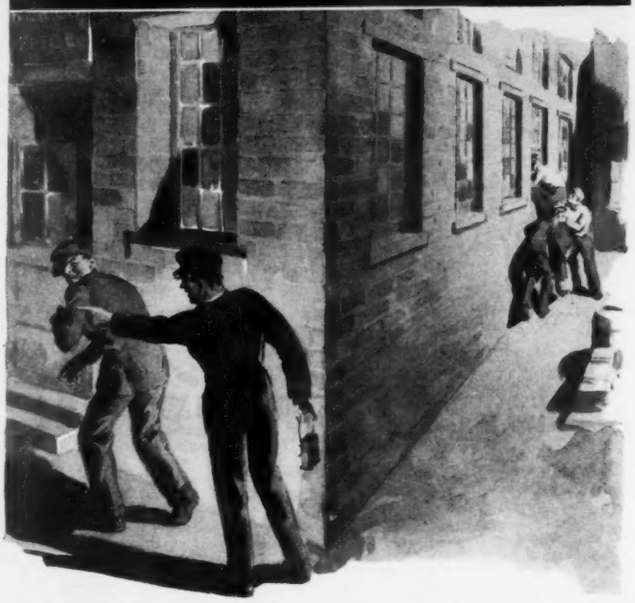

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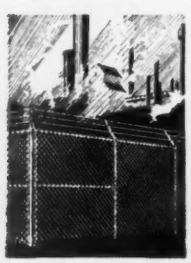

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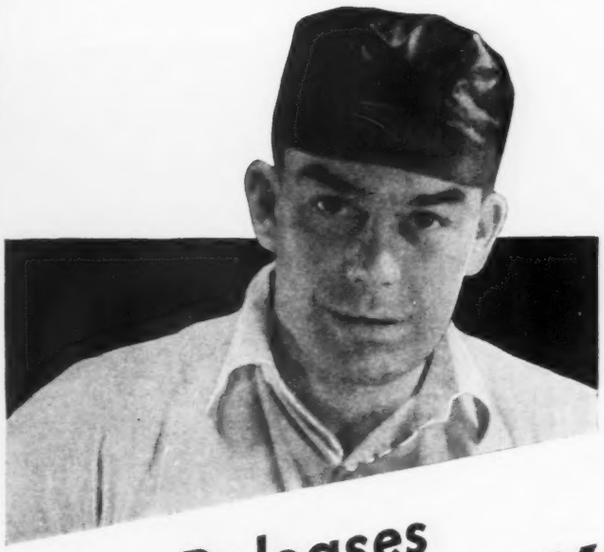

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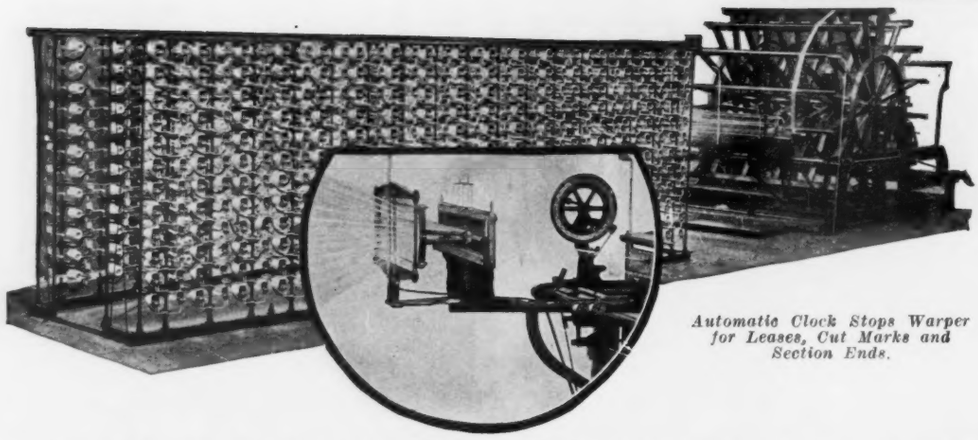

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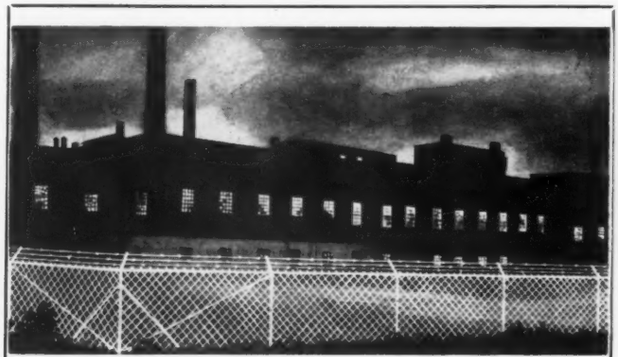

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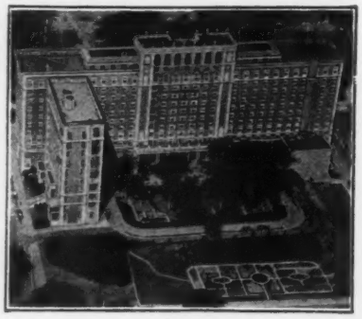

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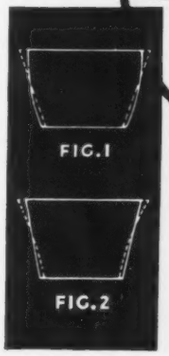

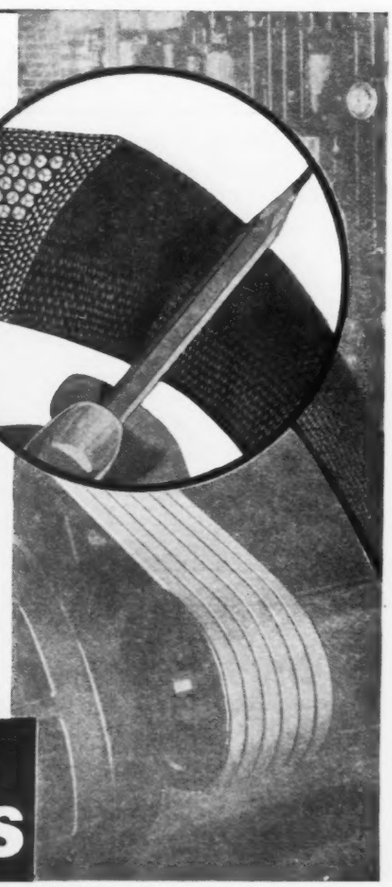

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4—Saco-Lowell Spinning Frames, 228 Spindles, band drive, 3" gauge, 2 1/7" ring, 1915.

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4—160 Spindle Howard & Bullough Twisters, TAPE DRIVE, 5½" gauge, 4½" ring, 1917.

3—140 Spindle Howard & Bullough Twisters, TAPE DRIVE, 5½" gauge, 4½" ring, 1917.

11—140 Spindle Howard & Bullough Twisters, band drive, 5½" gauge, 4½" ring, 1915.

8—Model 30 Foster Cone Winders, 100 spindles, equipped with new Foster No. 20 tensions.

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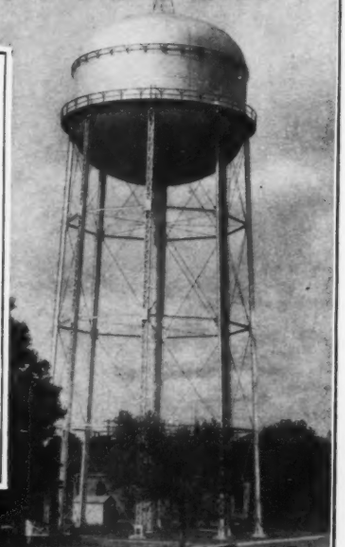

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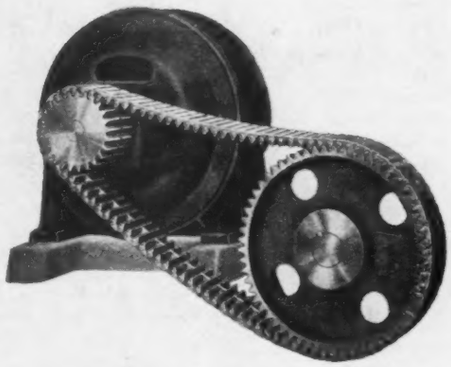

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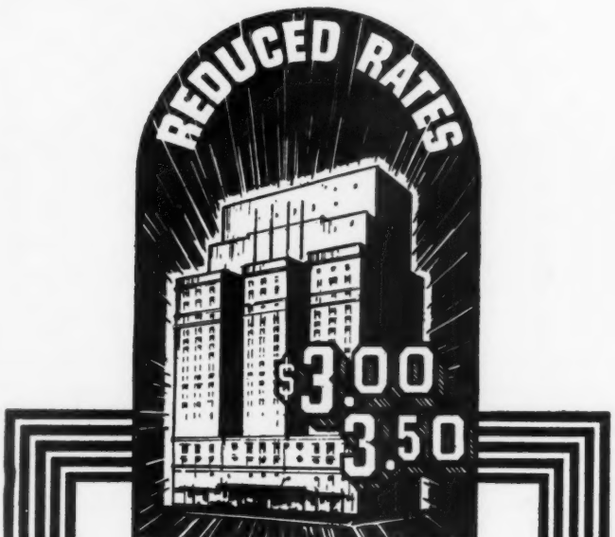

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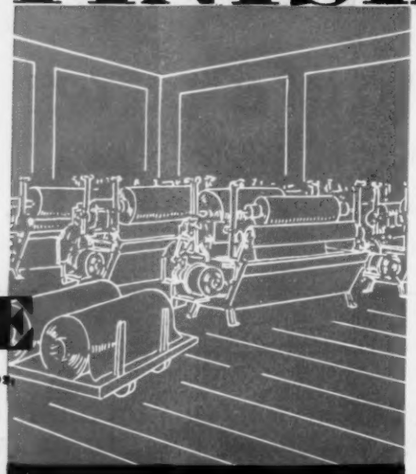

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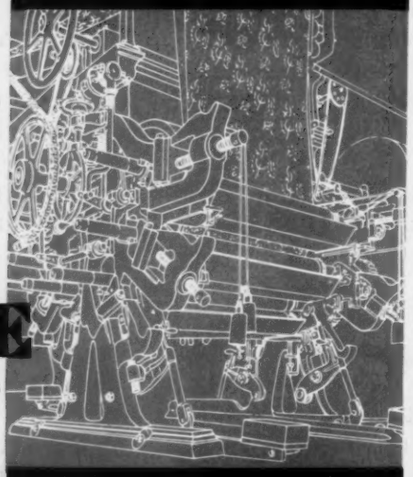

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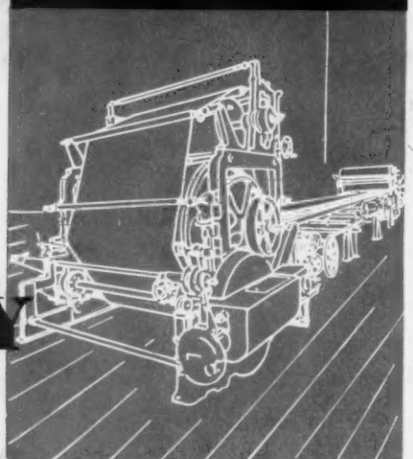

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